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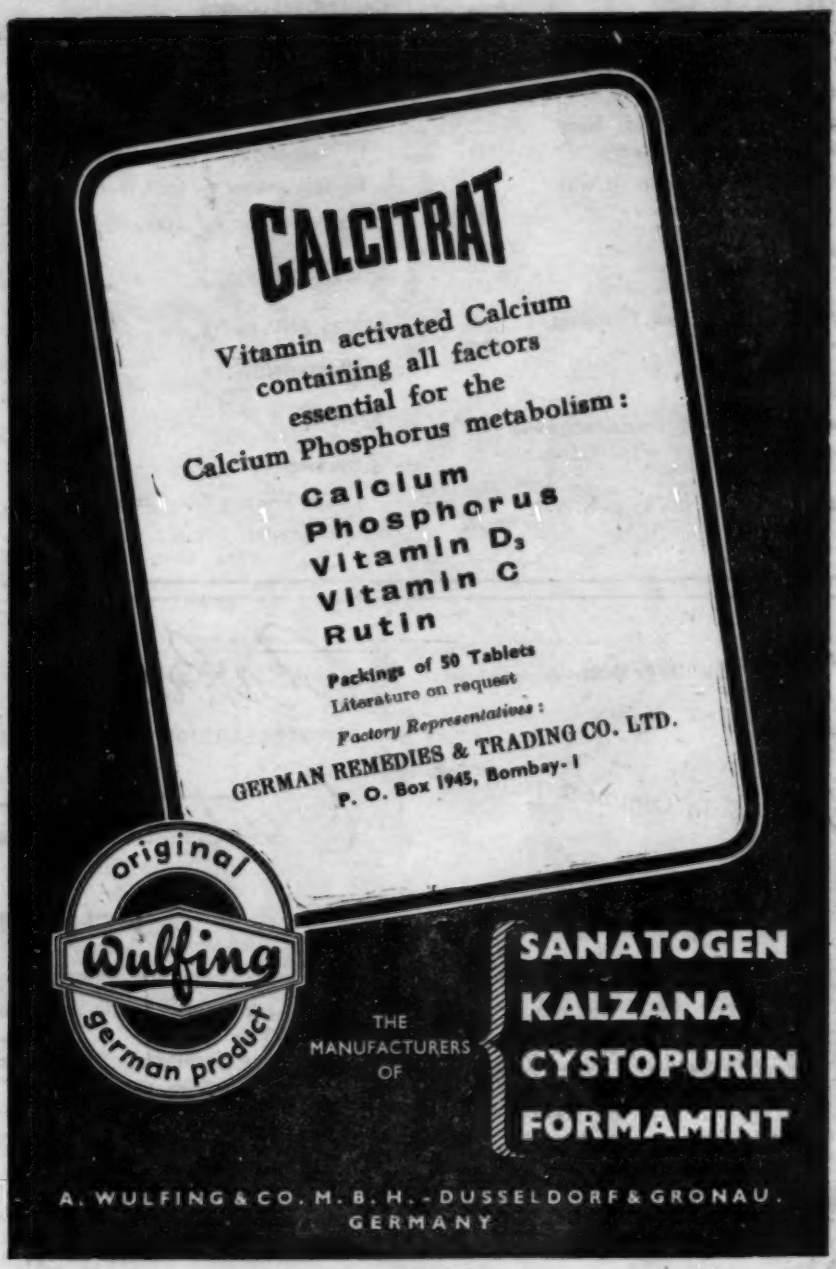
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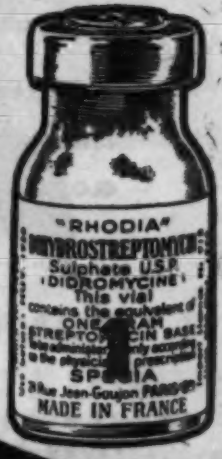

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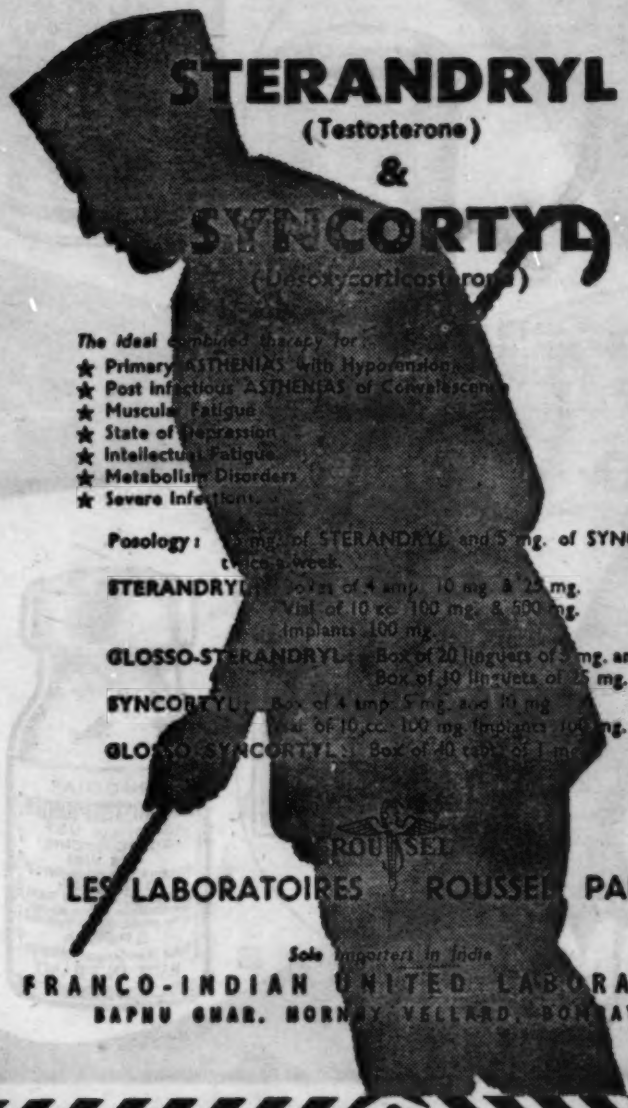

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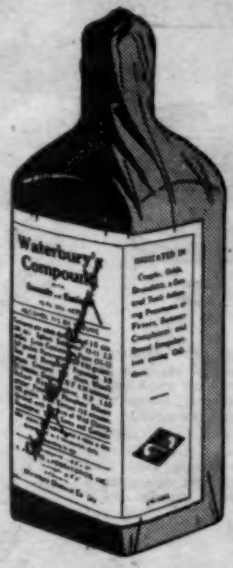

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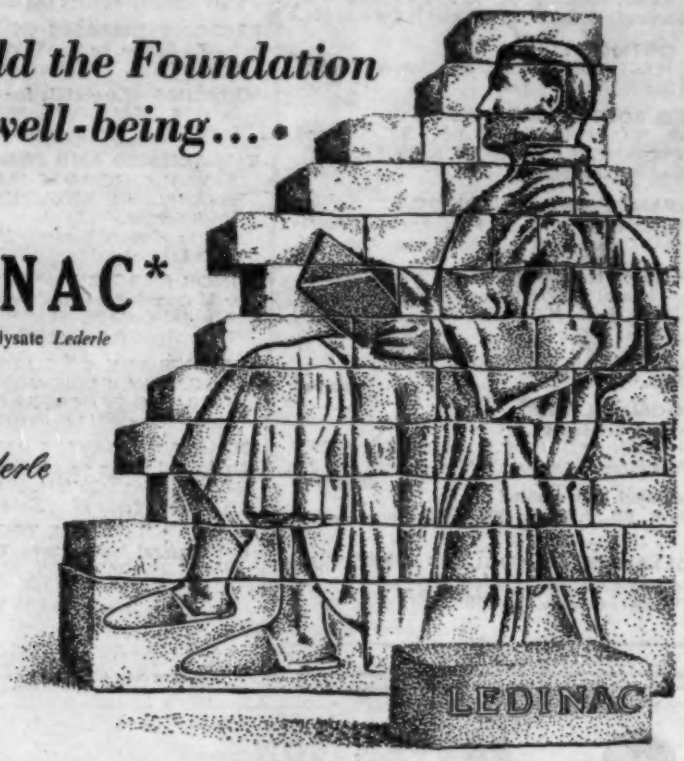

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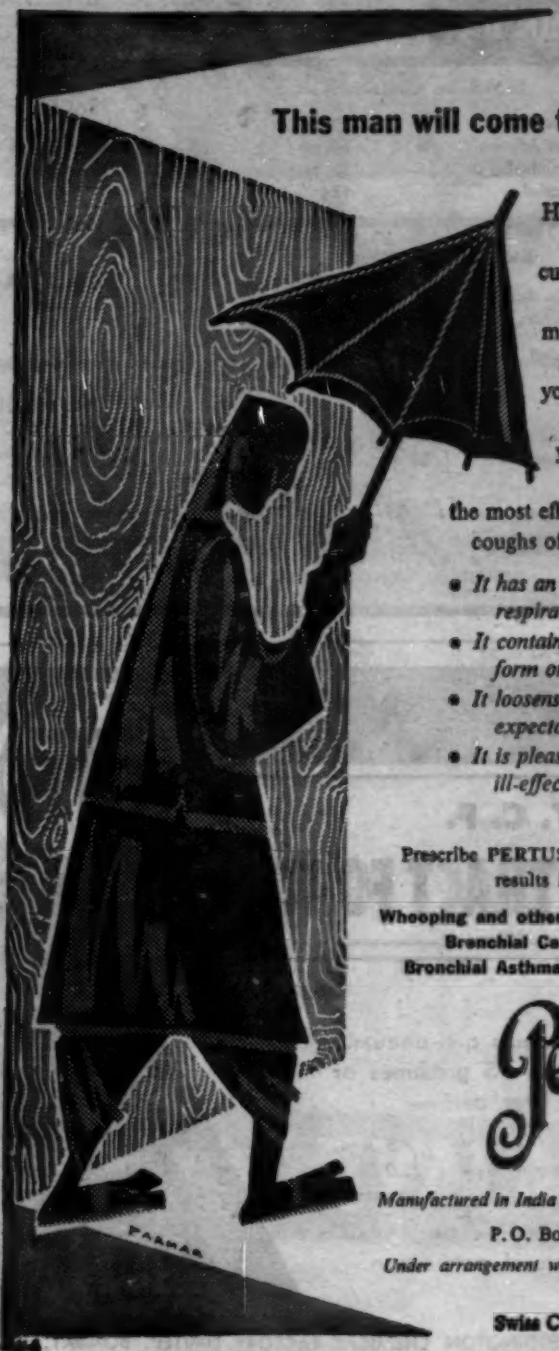

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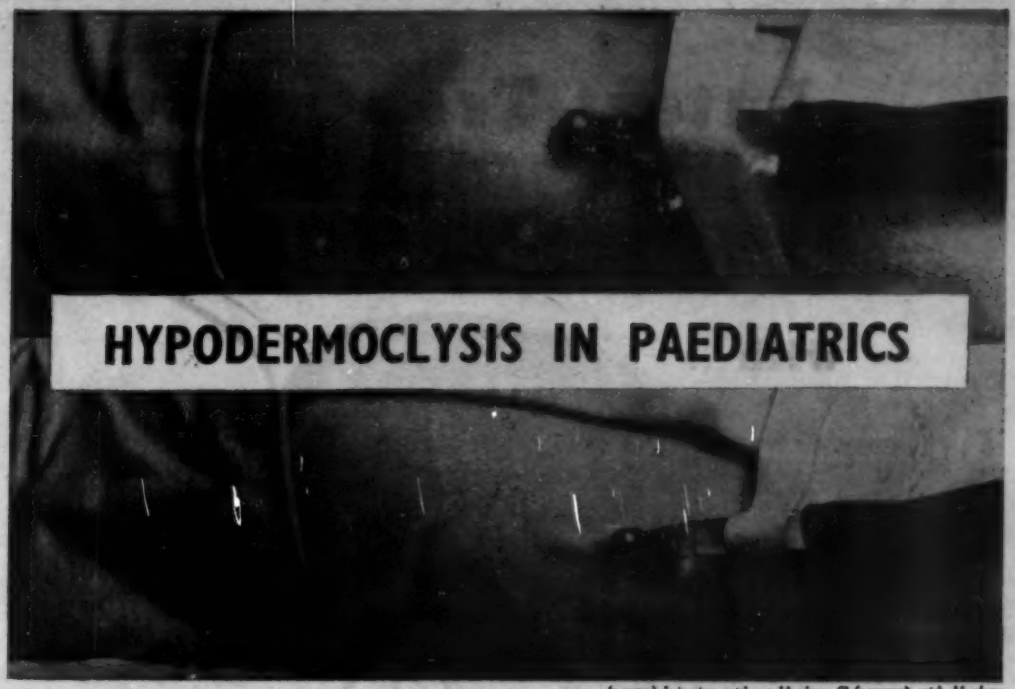

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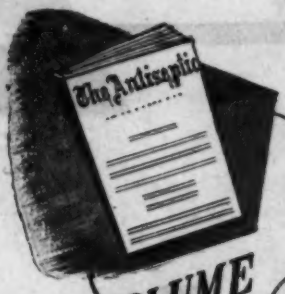

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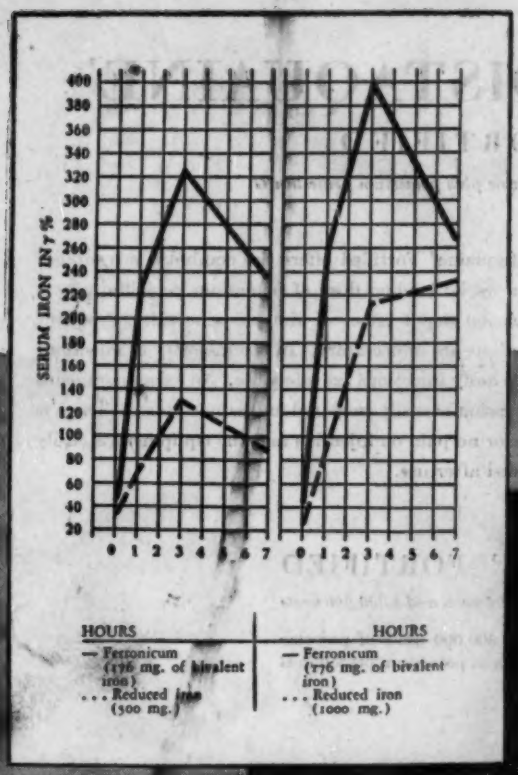

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ORIGINAL ARTICLES

PREGNANCY TEST: SEASONAL VARIATIONS IN THE RESPONSE OF THE MALE FROG RANA TIGRINA

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Department of Physiology,
Topiwala National Medical College, Bombay.

In my previous paper (Rane, 1953), the locally available male frog *Rana tigrina* as a test animal has been proved to be useful for the diagnosis of pregnancy. It was found that only 58 per cent of the injected frogs in the positive tests in this series gave 'the sperm release' response. This amply substantiates the use of at least five frogs for each test. Tests carried with such number of frogs have yielded a high percentage of accurate results. Using only a single frog for each test Pathak (1954) found only 60 per cent accuracy. For determining the cause of failures he examined the sections of the testes of these frogs and found that in the breeding season the testes almost always contained sperms while in the non-breeding season the storage of the sperms was either poor or totally absent. Out of the 26 non-reactors he could find sperms in 20 though less abundant. I too had an identical experience. The non-release of the sperms in those animals where they are absent in the testes is quite obvious, but the reason why in case of some of them the sperms are not released, inspite of being stored in the testes, is not understood. Factors such as the weight of the frogs, increase in the amount of the urine injected, concentration of the sample of the urine, etc. do not seem to affect the results of the test. The factor which does affect the result of the test is the number of frogs injected on each occasion.

In a series of 588 tests performed for the diagnosis of pregnancy in the course of two years, 2751 frogs were injected. As a routine five frogs were injected with each sample unless the quantity received was less. Out of the five, two were injected with 10 c.c. and three with 5 c.c. of urine. The modified technique of injecting into the ventral lymph sac of the frog, through the mucous membrane of its mouth, has made it possible to inject such a large number of frogs in this series without any difficulty and without loss of much time. (Fig. 1 and 2.) Out of a total of 2751 frogs that were injected only 17 died as a direct result of the test, a greater number of these died not as a result of any defect in the technique employed but as a result of the sample of the urine supplied being either stale or decomposed. Thus the mortality rate in the frogs, as a result of the tests carried out, approximates to about 0·62 per cent only.

Results

Table 1 shows the number of tests which were positive, month by month and compares the number of frogs which reacted with those which did not react.

In the first year under review only 54·6 per cent of the frogs injected in the positive tests reacted while the number for the second year was 54·5 per cent. Combining the figures for the two years but taking into consideration the number of frogs in the false negative tests it seems that only about 53 per cent amongst those which are injected react. Thus it will be seen that about 47 per cent of the frogs for some reason or the other are non-reactors

in the species of *Rana tigrina*. To clear any doubts it may be stated that the sex of these non-reactors has however been confirmed in the earlier stages of the work by dissection. Generally there is a difficulty in finding out the sex of the frogs. The black vocal pouch underneath the skin, by the side of the throat, has been observed to be a cent per cent confirmatory sign of the male frog and only the frogs presenting such a pouch were selected for these tests.

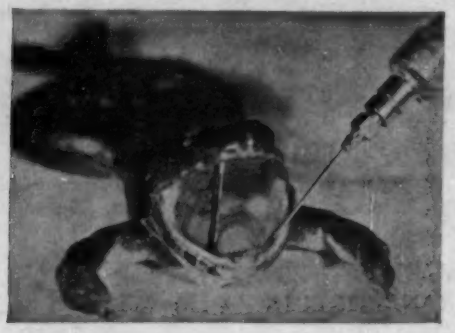

FIG. 1—THE POINT OF INJECTION IN THE MUCOUS MEMBRANE OF THE MOUTH.

FIG. 2—THE METHOD OF INJECTION.

TABLE 1

Month	Positive tests	No. of frogs injected	With 10 c.cs.		With 5 c.cs.		Per cent Positive	Monthly average mean minimal day temperature in degrees F.
			Positive	Negative	Positive	Negative		
Sept. 52 ...	4	16	4	2	4	6	50	75·9
Oct. 52 ...	3	14	5	1	3	5	57·1	76
Nov. 52 ...	4	18	3	5	5	5	44·4	69·4
Dec. 52 ...	7	36	7	7	6	16	36·1	70·1
Jan. 53 ...	12	53	13	7	9	24	41·5	66·1
Feb. 53 ...	25	111	25	12	30	44	50	69·8
Mar. 53 ...	27	131	23	13	59	36	62·6	75·2
Apr. 53 ...	8	39	6	5	17	11	59	78
May 53 ...	4	18	4	3	9	2	72·2	80·4
June 53 ...	—	—	—	—	—	—	—	78·8
July 53 ...	7	31	9	—	17	5	84	80·4
Aug. 53 ...	11	53	11	9	15	18	49	78·8
Total ...	112	520	110	64	174	172	54·6	—
Sept. 53 ...	7	35	3	11	9	12	34·3	76·5
Oct. 53 ...	1	4	—	1	2	1	50	77
Nov. 53 ...	3	10	2	—	2	6	40	72·3
Dec. 53 ...	2	9	3	1	1	4	44·4	68·6
Jan. 54 ...	10	48	8	11	8	21	33·3	66·6
Feb. 54 ...	9	45	7	11	8	19	33·3	70·1
Mar. 54 ...	20	99	22	16	29	32	51·4	73·8
Apr. 54 ...	16	79	18	13	24	24	55·3	77
May 54 ...	—	—	—	—	—	—	—	80·6
June 54 ...	6	30	9	3	14	4	76·4	79·1
July 54 ...	15	75	28	2	38	7	86	76·3
Aug. 54 ...	15	71	12	20	28	11	56·3	76·7
Total ...	104	505	112	89	163	141	54·5	—
Grand Total ...	216	1025	222	153	337	313	54·55	—

Seasonal Variations—The response of 'sperm release' seems to be maximum during the months of June and July, which period is about the breeding season in the *Rana tigrina* species. Response during the period March to August is comparatively better than that during the period September to February. Response during the months of November, December and January is comparatively the lowest.

This response is closely related with the prevailing room temperatures (the monthly average mean of the minimal day temperature as recorded by the Meteorological Department of India, at the Colaba Observatory at Bombay) except during the months of June and July.

Conclusions

The percentage of the response and its relation to the room temperature shows that of the various atmospheric conditions the prevailing room temperature, which varies in the different seasons, affects 'the sperm release' response in the case of the male frog *Rana tigrina*. During the breeding season other factors, probably the endocrine ones, are at work naturally and hence the response is maximum. To prove the definite effect of the room temperatures on the response, one will have to study a series of tests at various ranges of and controlled temperatures. It is not appreciable as through what mechanism the temperature affects the response in the *Rana tigrina*. Pathak (1954) has suggested that an improvement in the response may be obtained after sensitising the frog with pituitary gonadotropins. Similarly, it is difficult to understand why some frogs release sperms at lower temperatures while others do not?

It is obvious that if a single frog is used for each test the results obtained therefrom will vary with the season. In order to obtain better accuracy one must therefore use a number of frogs for each test, thus ruling out the element of chance. The percentage of accuracy obtained by the use of five frogs therefore has been very high. In the light of the above observations, in order to obtain better results still, one should increase the number of frogs for each test, during the period when the percentage of reactors is the lowest and decrease the number where the percentage of reactors is the highest. This will assure that the test will be immaculate in all the seasons inspite of the seasonal variations in the response of the frogs. Holyoke and Hoag (1951) have observed that in the frog the minimum amounts of chorionic gonadotropic hormone in units vary according to the various periods of the year in order to give a response on injection. Mukherjee and Saha (1952) report a very high percentage of accurate results by using a single frog for each test. Obviously there appears to be no seasonal or other variations in the response of the male frog *Rana tigrina* in Calcutta as is found in Bombay or Baroda.

Summary

2751 frogs were injected for 588 tests. In the positive cases only 53 per cent of the injected frogs react, while 47 per cent of the male *Rana tigrina* for some reason or the other did not react. Five frogs were used for each sample, which was injected into the ventral lymph sac by the modified technique of injecting through the mucous membrane of the mouth.

The response shows a seasonal variation and when the graph of response and the room temperature is compared, there seems to be a relation between the two.

In order to obtain better and accurate results when this locally available male frog *Rana tigrina* is used their number for each test should necessarily be more than one in order to obviate the variation in the response of the individual frog of this species.

Acknowledgment

My thanks are due to the Director, Meteorological Department of India, Colaba Observatory, Bombay; to Prof. Rindani, Sri Chavan and to the staff of the Obstetric and Gynaecological department of the B. Y. L. Nair Hospital, for their help.

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DACRYOCYSTITIS

A CLINICO-PATHOLOGICAL STUDY

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Inflammation of the lacrimal sac and duct is a common and an unpleasant disease. It usually causes troublesome and conspicuous symptoms and

has little tendency to resolve. Its adequate treatment presents problems some of which can hardly yet be said to be solved. If not diagnosed properly, it may lead on to dangerous complications as hypopyon ulcers and panophthalmitis.

Methods and Materials

All the cases of dacryocystitis coming to the ophthalmic department of King George Hospital during the year 1952-53 were investigated and studied from the point of causation of this disease. So far 20 cases could be studied. Patients were examined with particular reference to the lacrimal apparatus and the conjunctiva. A smear and culture of conjunctival discharge were examined as a routine. The patency of the duct was found out either by instilling fluorescein into the conjunctival sac and demonstration of its appearance in nose or by syringing the lacrimal passage with a coloured fluid.

Every case was investigated for any evidence of septic infection in nasal and paranasal sinuses, any mechanical obstruction in the nasal passage or any inflammatory or neoplastic disease of the nose. Detailed radiological examination of the bony canal and of the membranous passages were made after an injection of opaque substance like lipiodol, to find out the state of the sac and duct, presence of diverticula, site of stricture and presence of tumours. Blood for serological reactions was sent as a routine in all the cases. After excision of the sac was done, a detailed histological study of the sections stained by haematoxylin and eosin and van Gieson's stain was done.

Incidence

There seems to be an increasing incidence of this dacryocystitis forming a fairly good percentage of lacrimal diseases (Table 1).

Table 1—Showing the Percentage Incidence of Dacryocystitis

Year	No. of lacrimal diseases	No. of dacryocystitis	Percentage
1950 ...	401	39	9·7
1951 ...	425	45	10·6
1952 ...	534	50	9·4
1953 ...	571	75	13·1

Age—Usually adults over middle life are affected, the highest number of recorded cases being in the fifth decade. Few cases are recorded in the newborn (dacryocystitis neonatorum) probably due to the developmental anomalies. In our series the lowest age recorded was 1½ years the highest age being 65 and maximum number of cases recorded being in the 4th and 5th decades.

Sex—The disease is more common in females and is being well exemplified in our series wherein 14 out of 20 affected were females. In cases of congenital dacryocystitis both sexes are commonly affected and we had one case in either sex. The striking predilection in the females is probably due to a narrower lumen of the bony lacrimal canal.

There has been no unanimous opinion regarding the side affected. We had in our series right eye affected in 8 and the left in 12 cases. So this disease has no particular predilection to the side and we encountered only 4 bilateral cases and hence usually only one eye is affected.

Occupation, Social Standing—Almost all the cases in this series are persons who are either labourers or persons placed in poor economic conditions. In the majority of conditions they lack cleanliness. How far this can be attributed as a predisposing factor for dacryocystitis is difficult to say as, well placed and civilised persons are also not immune to this disease. Similarly it is very difficult to conclude whether there is any hereditary or familial predisposition as we have met with only three cases wherein a history of similar occurrence in the family was noticed.

Clinical Types

The various clinical types and number of cases in each that we have come across is recorded in Table 2.

Table 2—Showing the Various Clinical Types

No.	Clinical type	No. of cases	Percentage
1.	Acute dacryocystitis ...	5	25
2.	Chronic dacryocystitis ...	7	35
3.	Lacrimal fistula ...	4	20
4.	Mucocele	2	10
5.	Congenital dacryocystitis	2	10

Thus it is seen that chronic dacryocystitis is the commonest of all the typos and mucocele and congenital types are relatively rare. The following case of mucocele is recorded for its rarity.

Case report—R. A., female, aged 48, was admitted in the ophthalmic department, King George Hospital, Visakhapatnam for a swelling in the lacrimal region since two months. She had epiphora since 1½ years and since 2 months swelling has increased and there is no epiphora. Local examination revealed a fluctuant swelling of about ¾" size in the lacrimal region bulging out just

below the inner canthus under the medial palpebral ligament (Fig. 1). No evidence of regurgitation. No tenderness.

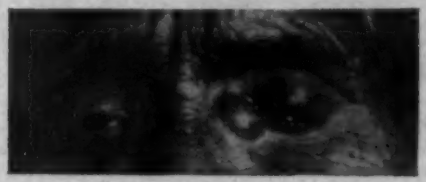

FIG. 1—CLINICAL PHOTOGRAPH SHOWING THE MUCOCELE ON THE LEFT SIDE AT THE CLASSICAL SITE

On syringing the duct was blocked and a diagnosis of encysted mucocele was made and a sac was completely excised and the patient made an uneventful recovery.

AETIOLOGY

In most of our cases the cause of inflammation was not clear for clinically it appeared to start primarily in the lacrimal sac itself. But the essential prerequisite for the development of infection is the occurrence of stasis of the contents of the sac which may be due to obstruction. In our series 12 cases showed blockage of the duct and necessarily led to stasis and infection.

In three cases the cause could be thought of in the nose where the causes for obstruction of the nasolacrimal duct were chronic rhinitis, hypertrophy with thickening of the mucous membrane and enlargement of inferior turbinate bone. In one case infection of the maxillary sinus was suggested. These put us on the guard in that every case of dacryocystitis must be thoroughly investigated specially for nasal disorders.

Association of trachoma with dacryocystitis was seen in three cases. It was not possible to prove that trachoma had been the cause of dacryocystitis as the typical histological changes in the wall of sac and cell inclusions were not seen.

In two cases blood was positive for syphilis. One case actually had secondary syphilitic rashes and the other had symptoms in the genital area. The common involvement of lacrimal sac in syphilis is due to infection secondary to a syphilitic osteoperiosteitis of the neighbouring bones.

A case of caries spine with cold abscess having phlyctenular keratoconjunctivitis and positive Mantoux's is described. He had chronic dacryocystitis both eyes and no signs of tuberculous infection in the neighbourhood. So it is quite possible that the infection might have been carried exogenously to lacrimal sac or haematogenously.

Chemical irritant can be the exciting cause. Sometimes the irritant may cause violent swelling and inflammation of the conjunctiva which may spread down to involve the lacrimal sac. One such case is noted in the above series. In another case of lacrimal fistula the patient suffered from small pox previously and it is well known that general infections like small pox are responsible for dacryocystitis.

We have not come across with any mycotic infections like actinomycosis or rhinosporidiosis even though Reddy (1954) described 10 cases of dacryocystitis in 156 biopsies of rhinosporidium, studied during a ten year period.

BACTERIOLOGY

The various types of organisms from inflamed sac isolated from culture are given in tabular form (Table 3).

TABLE 3—SHOWING THE PERCENTAGE INCIDENCE OF VARIOUS ORGANISMS ISOLATED FROM CULTURES

No.	Natnre of organisms	No. of cases	Percentage
1.	Staphylococcus ...	7	35
2.	Streptococcus ...	5	25
3.	Pneumococcus ...	3	15
4.	Xerosis bacilli ...	1	5
5.	Morax-Axenfeld ...	1	5
6.	No organism ...	3	15

SIGNS AND SYMPTOMS

The predominant clinical features for which these patients seek admission to the hospital are given in Table 4.

TABLE 4—SHOWING CHIEF CLINICAL FEATURES

No.	Clinical features	No. of cases	Percentage
1.	Epiphora	16	80
2.	Angular conjunctivitis ...	15	75
3.	Swelling of lacrimal region	13	65
4.	Mucopurulent discharge	11	55
5.	Inflammatory signs ...	7	35
6.	Defective vision ...	5	25
7.	Fistula	4	20
8.	History of trauma ...	2	10
9.	Mucocele	1	5

From Table 4 it is clear that epiphora, angular conjunctivitis, swelling of the lacrimal region and mucopurulent discharge are constant clinical features. This is in general agreement with that recorded in literature.

HISTOLOGY

Whenever the lacrimal sacs were excised a detailed histological examination was made and sections were studied, stained with haematoxylin

and eosin and van Gieson's stain. A brief summary of the histological study is given below.

The columnar epithelium lining the sac was proliferated and in places was lost and shed into the lumen (Fig. 2, *vide* Plate). In some sections the columnar epithelium underwent a metaplastic change to squamous epithelium partially leaving behind a normal lining columnar epithelium in other areas (Fig. 3, *vide* Plate). The squamous epithelium lining the duct was also proliferated and various layers of these cells could be seen. In later stages there was complete loss of lining epithelium. In all the sections studied the submucous tissue was almost always infiltrated with dense and diffuse collections of chronic inflammatory cells in the nature of small lymphocytes and mononuclears. The glands in the submucosal tissue were distended with mucoid secretions and the epithelium shed (Fig. 4, *vide* Plate). A few sections studied showed follicular aggregation of these lymphocytes very closely resembling the lymph follicle of the lymph node (Fig. 5, *vide* Plate). In advanced and chronic cases there was fibrous tissue formation and dense band of fibrous tissue could be seen in some of the sections studied.

Treatment

All cases of acute dacryocystitis were treated conservatively with hot fomentations, penicillin eye drops and sulphadiazine (2 tablets—6-hourly) by mouth until the whole condition resolved.

In cases of chronic dacryocystitis associated with focal sepsis the sac was excised after eradicating the focal sepsis. In all other cases of chronic dacryocystitis, mucocele and fistula, excision of the sac was done.

In congenital dacryocystitis, conservative treatment was followed as recorded in case reports.

Summary

Detailed study of 20 cases of dacryocystitis regarding the various aspects was made.

Stress was laid for routine radiological and nasal examinations in all cases of dacryocystitis.

One case of mucocele is recorded.

Complete and thorough histological study was made of the excised sacs.

Acknowledgment

We are very grateful to Dr. S. N. Gantayat, Professor of Ophthalmology, Andhra Medical College, Visakhapatnam for all the encouragement and guidance given. With pleasure we acknowledge the help rendered by Photoartist Edwin.

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RHEUMATIC HEART DISEASE COMPLICATED WITH RHEUMATOID ARTHRITIS

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The aetiology of rheumatic fever and rheumatoid arthritis is still in an unsettled state. There is the unitary theory proposed by great clinicians like Hutchison and Poynton that the fundamental basis of the two diseases is the same. There are others (Klemperer, Pollock and Baehr, 1941) who believe them to be different entities of a big group of collagen diseases. There are several clinical and pathological features of the two diseases which have been put forward in the literature with varying opinions and need clarification.

One aspect of the disease that has attracted attention in recent years is the coexistence of acute rheumatic fever and rheumatoid arthritis in the same patient (Bywaters, 1950). On the basis of autopsy study of 27 cases he classified the cases into three groups:

1. Rheumatic arthritis with rheumatic heart lesions;
2. Rheumatic fever with rheumatic heart disease followed later by rheumatoid arthritis;
3. Rheumatic fever with rheumatic heart disease complicated by chronic (post-rheumatic) fibrous rheumatism of the Jaccoud type.

The purpose of the present communication is to give a brief review of the literature on heart lesions in rheumatoid arthritis and report two cases of rheumatic fever with cardiac involvement who later on developed chronic type of rheumatoid arthritis.

Historical Review

It was in the later part of the 18th century that rheumatic arthritis began to be associated with cardiac lesions, but rheumatic heart disease as a major clinical syndrome was first described by Bouillaud (1836), who emphasised the association of cardiac lesions with that of the joints. In 1889 Jaccoud (1889) quoted by Bywaters (1950) first described a case who had several attacks of rheumatic fever but later on his patient developed rheumatoid arthritis lasting for several months. His patient developed cardiac lesions, so it was an example of a case who started with several attacks of acute rheumatic fever but developed chronic rheumatism later.

It was at the end of the last century and the beginning of the present century that roentgenology brought new light to the subject and rheumatic fever was differentiated from rheumatoid arthritis. Wetherby (1932) analysed 350 patients of "chronic arthritis" and found evidence of rheumatic heart disease in 2 per cent, but in 32 of his cases the disease commenced as acute migrating type of polyarthritis which later on progressed to rheumatoid arthritis. In the latter group the incidence was much higher (18·7 per cent).

Master and Jaffee (1934) found no electrocardiographic evidence of cardiac involvement in 50 cases of acute rheumatoid arthritis. They observed that acute rheumatoid arthritis, in contrast to rheumatic fever, was not a disease of the heart. Dawson and Tyson (1936) reported an incidence of 7 per cent in 100 consecutive cases of rheumatoid arthritis. Of 100 cases studied by Ellman (1944) coexistence of rheumatic carditis was found in 8. Gill (1949) found evidence of cardiac lesions like those of rheumatic fever in 20 cases out of a series of 300 cases of rheumatoid arthritis. Fingerman and Andrus (1943) reported an incidence of 33 per cent at necropsy of 25 cases. Young and Schwedel (1944) observed a much higher figure. In a study of autopsy data of 38 cases an incidence of 65·7 per cent is reported by them. Definite cardiac lesions were found in 39·4 per cent cases analysed from necropsy material of 66 cases reported by Graef, Hickey and Altmann (1949).

Bradfield and Hejtmanick (1950) reviewed the literature extensively and reported an analysis of 154 cases of their own of rheumatoid arthritis fulfilling the criteria of the committee of the American Rheumatism Association. They excluded the older group where possibility of arteriosclerotic heart disease could be entertained. They observed definite clinical, roentgenological, or electrocardiographic evidence of rheumatic heart disease in 15·7 per cent cases. In a recent autopsy study, however, a low incidence of 7 per cent has been reported by Bywaters (*loc. cit.*). Sokoloff (1953) has made a critical study of this problem. The discrepancy that occurs in various reports is due to different criteria adopted in making a diagnosis of rheumatic lesions in the heart. In India, Wahi and Samuel (1951) at Agra on autopsy material of 50 cases who died of causes other than rheumatic heart disease found stigmata of rheumatic inflammation in 56 per cent cases.

In recent years a new label has been introduced called 'rheumatoid heart disease'. It has been observed that lesions like subcutaneous necrobiotic nodules may also be found in the pericardium and heart muscle, and sometime even in mitral and aortic leaflets. It is not yet clear as to what is the true incidence of cardiac involvement in rheumatoid arthritis.

Two cases, presented below, started their illness with a clinical picture of rheumatic heart disease where the onset was with migrating polyarthritis but they gradually progressed to permanent polyarthritis following the acute attacks. There were some other interesting clinical features also.

Case Reports

Case 1—C. L., a Hindu male child of 10, coming from an average lower middle class family, presented himself in the hospital on 10-10-1952 with the complaints of fever and pain in various joints of three months' duration. The joint pain started with the knees getting involved first. They became swollen, tender and painful on movement. Later on the ankles and wrists were involved but the knee joints were relieved. Along with the arthritis the child developed pyrexia ranging from 99°—100°F. After about two months of this illness he began to have exertional dyspnoea and palpitation. A fortnight before admission the patient developed swelling of the interphalangeal joints. There was no previous history of articular rheumatism, nor was there any other relevant illness.

Physical examination—The child was of average build, moderately nourished but slightly anaemic in appearance. Temperature was 100°F and the pulse was 92 per minute and regular. The respiratory rate was 16 per minute. Blood pressure was 100/64 mm. of Hg. The cardiac impulse was diffuse. There was no thrill. In the mitral area a blowing systolic murmur transmitted to the axilla and a diastolic murmur (Carey Coombs) were heard. The articular system showed that both knees and ankles were swollen, tender and painful on movement. There was no evidence of fluid in the joints. The proximal interphalangeal joints of both hands were swollen and gave a spindle-shaped appearance to the fingers. Small, discrete, painless, subcutaneous nodules were palpable over the occipital region, back of the right hand and external surface of both ankles. The rest of the systems were normal. A provisional diagnosis of acute rheumatic carditis was made.

Laboratory and other data—Hb.—7·5 g. per cent, R.B.C.—2·54 million per c.mm., W.B.C.—6,200 per c.mm. with poly. 48 per cent, lympho. 50 per cent and eosinophil 2 per cent. Erythrocyte sedimentation rate (Westergren): 11-10-52—15 mm.; 13-10-52—17 mm.; 17-10-52—35 mm.; 23-10-52—17 mm. Blood urea—24 mg. per 100 c.c. Mantoux test—negative. X-ray showed cardiac mitralisation in P.A. view and prominent left auricular shadow on barium filled oesophagus in the R.A.O. view. Electrocardiogram revealed sinus arrhythmia.

Repetitions of E.S.R. were necessitated due to disparity between the acute nature of the symptoms and the E.S.R. readings. Prolonged treatment with salicylates only relieved the joint pains, but there was no relief of pyrexia and joint deformities. A trial with chrysotherapy had to be terminated after a few injections due to exfoliation of the skin. On follow up for over 18 months he

presents a picture of rheumatoid arthritis and mitral stenosis.

CASE 2—P. W., a female child of 9, from a lower class Hindu family, was admitted on 8-6-1953 with a diagnosis of acute rheumatic arthritis and carditis with pyrexia, and pains in multiple joints of six weeks' duration. Scattered multiple nodules had been seen by the parents for over a month. There was a preceding history of recurrent sore throat. There was nothing relevant in her past history except recurrent sore throat and no special features were present in her personal and family history.

Physical examination—The patient was moderately nourished, of medium build, but anaemic in complexion. Temperature was 99·8°F and the pulse 108 per minute and blood pressure was 106/70 mm. of Hg. The heart showed an early diastolic murmur in the mitral area. The rest of the systems were normal except findings in the articular system. The interphalangeal joints of index and middle fingers of both the hands were swollen, slightly tender, spindle-shaped, but without much restriction of movements (Fig. 1, *vide* Plate). Both the ankles were painful on movement but were otherwise normal. There were many subcutaneous, discrete, painless nodules of the size of a split pea on the occiput, back of both the elbows, and front of both the knees (Fig. 2, *vide* Plate).

Laboratory data—Hb.—7·4 g. per cent. Red blood cells—2·8 million per c.mm., total leucocyte count 9,000 per c.mm. with poly.—67 per cent, lympho.—30 per cent, large mono.—2 per cent, and eosinophil 1 per cent. Erythocyte sedimentation rate (Westergren): 9-6-53—26 mm.; 23-6-53—39 mm.; 19-7-53—18 mm.

Urine and stools showed no abnormality. Blood urea was 29 mg. Electrocardiogram revealed no abnormality.

Biopsy of the subcutaneous nodule—Section showed collagen tissue with areas of fibrinoid necrosis, and infiltration mostly by epithelioid cells, few lymphocytes, eosinophils and occasional plasma cell. The picture was one of rheumatic nodule.

COMMENTS

The main interesting comments on the above cases are that they both started with an acute onset resembling acute rheumatic arthritis. Both the cases had an extensive crop of rheumatic nodules which on biopsy revealed a typical pattern of histopathology of this lesion. It may be interesting to mention here that the incidence of subcutaneous nodules is not so common in rheumatic fever cases as observed in our clinic here. The figure comes to 3 per cent. Both the cases developed cardiac lesions and later on presented a typical picture of chronic rheumatoid arthritis. On the other hand several cases of Still's disease and other chronic types of rheumatoid arthritis have been observed here who despite their young age have not shown any cardiac lesions. One of our youngest case was only two years of age, yet the heart was free from rheumatic mischief. Although the present paper deals with only two cases, yet it is interesting to point out that those cases of rheumatoid arthritis who commence their illness resembling acute rheumatic fever get cardiac lesions. Another interesting feature of the first case is that despite well marked constitutional symptoms, active articular condition and extensive distribution of subcutaneous nodules, the blood sedimentation rate was more or less normal except on one occasion when it was slightly raised. Both the cases showed normal leucocyte counts throughout their illness.

SUMMARY

1. A brief review of the literature on cardiac lesions in cases of rheumatoid arthritis is presented.

2. Two cases of acute rheumatic fever with cardiac lesions are described who later on developed chronic form of rheumatoid arthritis.

3. Comments are made on some of the odd clinical features of these cases.

ACKNOWLEDGMENT

I am grateful to Dr. P. L. Wahi, of the Cardiology Clinic, for carrying out certain investigations in these cases and keeping a follow up record.

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Fig. 2—Photomicrograph illustrating the wall of the lacrimal sac with its lining epithelium denuded in places. (H & E × 60)

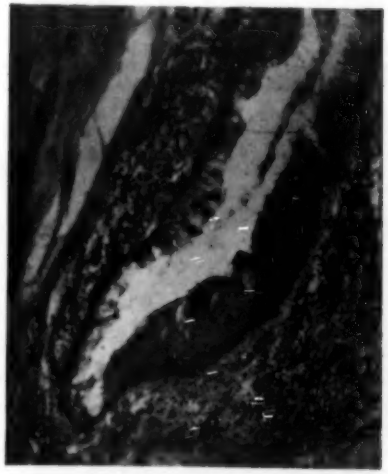

Fig. 3—Photomicrograph illustrating metaplasia of the lining columnar cells to squamous type in one segment. The normal lining columnar epithelium seen in other areas. (H & E × 60)

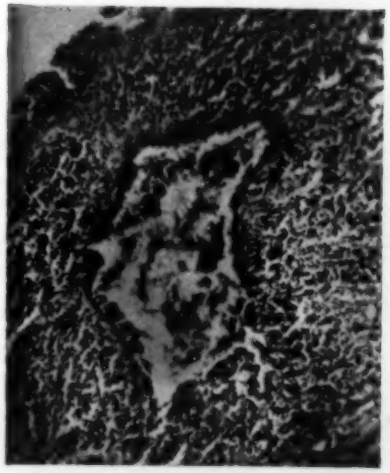

Fig. 4— Photomicrograph showing the dilated submucosal gland with the epithelium shed and the lumen distended with secretions. (H & E × 60)

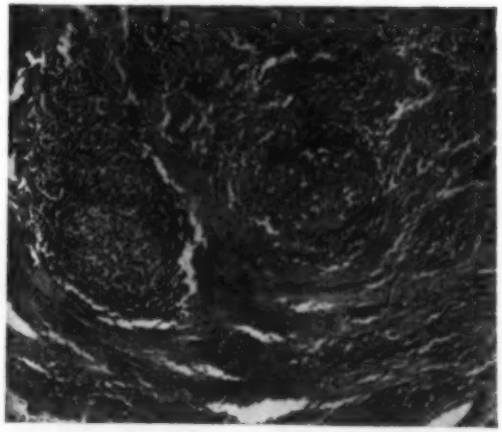

Fig. 5—Photomicrograph illustrating follicular aggregations of lymphocytes amidst collections of chronic inflammatory cells. (H. & E × 60)

REDDY AND REDDY—*Dacryocystitis (pp. 412-16)*

Fig. 1—Showing spindle shaped interpl alangeal joints.

Fig. 2—Showing typical subcutaneous nodules at the back of the elbow joints.

MALEOTEA—*Rheumatic Heart Disease Complicated with Rheumatoid Arthritis (pp. 416-18)*

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Fig. 1—The toe of this patient was gangrenous and oscillometry showed diminished pulse in the dorsalis pedis artery.

Fig. 2—Arteriography shows block at the lower end, middle and upper end of the femoral artery.

Fig. 3—Arteriography shows normal vessels both in the leg as well as in the thigh.

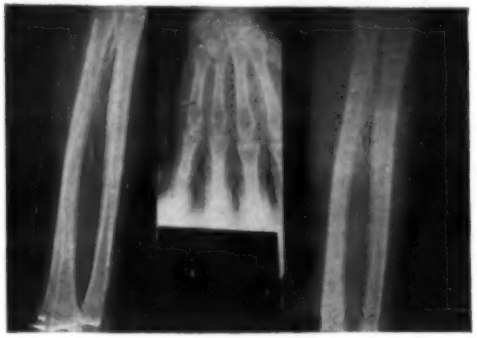

Fig. 4—Arteriography before (right) and after cervico-dorsal sympathectomy. Note absence of arteries below the middle of the arm in the skiagram on right and appearance of palmar arch in the skiagram in the middle.

Fig. 5—Arteriography showing (left) normal popliteal artery and its bifurcation and (right) slowly forming thrombus in the popliteal artery.

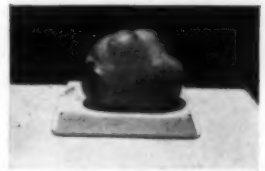

Fig. 1—The tumour

OHRI—*Peripheral Vascular Disease (pp. 421-25)*

KASBEKAR—*Arrhenoblastoma of the Ovary (pp. 432-33)*

REFRESHER COURSE

PERIPHERAL VASCULAR DISEASE

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The subject of peripheral vascular disease is vast. It should ordinarily include all abnormal conditions of the arteries and veins of the limbs as well as the blood vessels supplying the viscera of the body, such as the stomach, intestines, kidneys, heart and brain. The term is generally applied to the arterial disease of the limbs. Several classifications of peripheral vascular disease have been published. Some of them are unsatisfactory and others too elaborate to be of interest to a general medical practitioner. I do not propose to discuss all the affections of the blood vessels or even all the diseases of the arteries. The commonest condition is the diminished flow of blood in the arteries, at any rate in the part of the country (Madhya Bharat) to which I belong. It is this diminished flow of blood in the arteries which I shall discuss as far as it refers to the limbs.

Most of the cases attend the hospital when the disease is obvious on account of signs of threatened gangrene, or when the gangrene has already become manifest. It is the purpose of this paper to make the general practitioner aware of the common clinical features by which this inefficiency of the arterial tree can be diagnosed early and how he can help the patient out of his difficulty.

Main Groups—There are two main groups of cases :

(*i*) Functional vascular disturbance and
(*ii*) Organic vascular disorder.

In the functional group there is narrowing of the lumen of the vessels due to spasmodic contraction of the involuntary muscles of the vessel wall and in case of the organic group there is a structural change in the arteries. The two groups do not always remain distinct as a case of functional disturbance in course of time will inevitably develop organic changes in his vessels. Treatment is more satisfactory for functional cases and practically nothing can be done if the organic change is widespread. There will obviously be cases having mixed features of functional and organic disturbances. The patient is likely to benefit from treatment in proportion to how much defect is due to the functional element. It is important, therefore, to know first, whether a patient is suffering from diminished blood flow and if he is, the next step is to find out how much of this is due to spasm. The knowledge of this second factor will give an idea as to how far the patient will be benefited from treatment.

History and Clinical Features

It is necessary to take a careful history. The patient does not usually give the necessary information himself as he does not attribute all the symptoms to the same disease. The patient first gives the history in his own words and then it is supplemented by the information obtained through interrogation. The common symptoms are :

Fatigue and Pain—The earliest symptom is fatigue brought on after walking a certain distance. One may not consider this has anything to do with arterial inefficiency. If the condition is kept in mind and the patient on questioning explains that the fatigue of the limb is not a part of the general fatigue, though sometimes it may be so. It is one of the earliest symptoms of disease, particularly of organic vascular occlusion.

Intermittent claudication and rest pain in the limb are symptoms which are so characteristic of the disease that the diagnosis can always be made with confidence. The severity of the pain depends on the degree of arterial occlusion. The intermittent claudication is a cramp-like pain in the muscles of the calf and sometimes in the small muscles of the sole of the foot. This pain comes on suddenly after walking a certain distance and then the patient is unable to walk. After resting a short time the pain disappears and the patient can walk a shorter distance again. Earlier this spasm-like pain comes on occasionally when the patient has to walk a long distance and, therefore, it does not interfere with his normal duties. Later the distance he can walk without pain becomes shorter and shorter and the pain interferes with his normal pursuits. He learns to walk a short distance and then rest and then walk again. In this way usually he carries on as long as he can walk some distance. Eventually he gets pain even when resting (rest pain).

The patient usually does not give his history as above. He usually says that in the beginning the pain was less and recently it is more severe. It is only on questioning that a typical history comes forth. A typical history of intermittent claudication is diagnostic of diminished blood flow but pain may be present in conditions other than the diminished blood flow. These conditions are arthritis, neuritis and orthopaedic defects. It is, therefore, very essential to distinguish 'rest pain' of diminished blood flow from pain due to one of these conditions.

Sensory Disturbances—Numbness, tingling and sensation of coldness are the common complaints.

Many normal people have habitually cold hands and feet during winter. It is of significance when only one limb is complained of. In parts of the country where the winter is not severe, coldness of the limbs may not be a usual complaint. Numbness is a frequent complaint and some have a burning sensation associated with it. Tingling is sometimes a very troublesome symptom. All these are due to ischaemia of nerves of the part. Every one can easily recall such sensations when one has been sitting in a squating position for a long time. Pressure on a nerve gives rise to numbness on account of ischaemia and the return of blood to the nerve is associated with tingling and sometimes burning sensation.

General appearance and colour changes—The general appearance of most of these patients suggest that they are ill-nourished and emaciated. There is nothing else in general appearance that suggests the diagnosis except that some of them are found sitting in the out-patient department pressing their calf muscles or their feet. The affected limb in most of the cases, when they report themselves at the hospital, has an ulcer on the great or other toes. The colour changes in the limb, like pallor, cyanosis and pigmentation, do not form an important feature in our patients on account of their dark colour. Trophic disturbances are seen in the skin round the nails. There is fungus infection in the digital spaces.

Smoking and Alcohol—Almost all cases that we have seen were smokers of *bidis*. Some of them have been smoking as many as 30 to 40 *bidis* a day. Smoking has been proved to have a strong vasoconstriction action. Unfortunately the patient who is addicted to smoking smokes more when he has pain. The smoking gives some pleasure which compensates for the suffering from pain which is otherwise unbearable. On the other hand, when smoking was completely stopped the patient was very depressed and begged permission to smoke, failing which life was said to be unbearable. They usually smoked when they thought nobody was watching. When, however, the pain was relieved it was possible to persuade them not to smoke.

Alcohol in moderation is said to be beneficial as it is a vasodilator. Alcohol is also toxic, particularly the country liquor which these patients take. It may produce vasodilatation as an immediate effect but in the long run it tends to produce arteriosclerotic changes in the vessels and, is therefore, best avoided.

Physical Examination

On palpation one confirms the findings gathered from inspection and what is suspected from the history. Coldness of the limb is not marked in hot weather as the limbs are warmed by the atmospheric temperature. In cold weather, however, the coldness of the limbs is appreciated when palpated with the edge or back of the hand. Palpation of the pulses is very important. In the lower limb the femoral is felt in the thigh, the popliteal in the popliteal fossa, the dorsalis pedis in front of the ankle and the posterior tibial below the medial malleolus. In the upper limb the radial and brachial pulses are felt. This examination gives a fair estimate of the state of circulation. The history and the physical examination give one enough information to make a correct diagnosis of diminished arterial circulation.

Special Tests of Circulatory Function

The tests which follow are not necessary for routine diagnosis nor do they help in deciding the line of treatment. The tests are useful for accurate record of condition of circulation and degree of improvement after treatment and thus have an academic value.

Oscillometry is done with an oscillometer (Fig. 1, *vide* Plate). The oscillations are read in divisions and recorded by hand. The recording oscillometer works automatically so that human error is eliminated.

Skin temperature is recorded with skin thermometers. They are useful only in cold weather or if the patient is kept in a cold air-conditioned room in which the temperature is artificially kept low. Histamine and intradermal saline tests and effects of foreign proteins injections like those of T.A.B. vaccine are all of limited value.

Arteriography is very valuable to decide upon the line of treatment. After injecting 50 per cent pyelecton in the femoral artery (intra-arterial) percutaneous or after a surgical exposure (15 to 20 c.c.) or (5 to 10 c.c.) in case of brachial artery x'rays are taken rapidly. These x'rays clearly visualise the main artery and the anastomotic channels (Figs. 2 and 3, *vide* Plate). This is a valuable test to decide in cases where arterial grafting is considered and also to see exactly the effect of treatment on the anastomotic channels. (Fig. 4, *vide* Plate).

Similarly plethysmography gives an exact idea of the flow of blood in the limb before and after treatment. It is now possible with special plethysmographs to record the flow of blood even in small parts like the great toe.

Having confirmed that the patient is suffering from diminished flow in the arteries it has to be found out whether the cause is spasm or organic change. On this knowledge depends the decision

on the line of treatment and assessment of prognosis. The spasm can be relieved but extensive organic change is not reversible. The sympathetic action is removed and the improvement in blood supply is noted.

These tests are :

(1) Reflex vasodilatation. The contralateral limb is warmed and the rise of temperature in the affected limb is noted. If there is appreciable rise or rise approaching normal it indicates marked spasm.

(2) Sympathetic block is produced by blocking the lumbar ganglia with 2 per cent novocaine 5 c.c. in each on both sides or by spinal analgesia.

(3) Induction of sleep with the help of barbiturates will relax all spasm in blood vessels.

(4) Use of drugs like tolozoline hydrochloride and tetraethyl ammonium salts will produce vasodilatation by action on the sympathetic ganglia.

As a routine we do electrocardiography and fundus examination in all cases as it is stated that peripheral vascular disease is a part of the general disease affecting blood vessels of the rest of the body. We have not found general disturbance any more in these patients than in others of the same age. It is important, however, to do this examination as this will help in the choice of cases for operation. One would not think of an operation if the patient has, for instance, a coronary disease.

Classification

It is not the scope of this course to give an elaborate classification of all peripheral vascular disorders. From the point of view of treatment this disease is of two types :

(*i*) Vasospastic disorders.

(*ii*) Occlusive vascular disorders.

Vasospastic disorders form a small group of cases and the disorder is more common in the upper limb. They are commonly due to cervical rib and scalene syndrome and a few due to local arteriospasm.

Occlusive vascular disorders are very common and are generally in the lower limb. The treatment of the first group is simple but the management of the occlusive disorders is a problem which requires detailed consideration. Two diseases in this type are very common. They are thromboangiitis obliterans or Buerger's disease and arteriosclerosis. Boyd and his co-workers have had the opportunity of studying a very large series of cases of peripheral vascular disease and they are of the opinion that most of the cases (96 per cent) are of the senile obliterative arteritis (arteriosclerosis) and the remaining 4 per cent include cases of traumatic thrombosis and juvenile obliterative arteritis and primary popliteal thrombosis, the last two being the group called Buerger's disease. The arteriosclerotic changes in the arteries of the lower limb occur not only in cases of older group (above 50) but also in cases younger in age even below the age of 40. Whether it is so or not is a matter of academic interest as the treatment of the cases is to stop if possible the further march of the disease and open up the available channels to their maximum capacity irrespective of the cause of disease.

Management of Vascular Disorders

Most of the cases when they come for consultation already suffer severely from diminished circulation. In their case some operation is necessary to restore the circulation or the limb has to be sacrificed. Few of the cases report early. In their case conservative measures may help. The treatment is considered under the following heads :

(1) Conservative medical treatment.

(2) Surgical treatment :

(*a*) Sympathectomy ;

(*b*) Reconstruction operation ;

(*c*) Nerve block and tenotomy ;

(*d*) Amputation.

Medical Treatment :

Medical treatment is to be considered in cases of arterial occlusion of a short duration, say 2 or 3 months. Cases in which thrombosis occurs in the main vessel of the limb at a slow rate (Fig. 5, *vide* Plate) are likely to get their circulation stabilised by the opening up of the collateral circulation spontaneously or under medical treatment. These are the cases, therefore, in which medical treatment should be given a trial.

The conservative treatment consists of :

(*i*) General and local care ; (*ii*) Diet ; (*iii*) Exercise ; (*iv*) Use of vasodilator and sedative drugs.

General and local care—The patient must give up smoking altogether. The pain must be completely relieved by sedative drugs if the patient is expected to be successful in his resolve. The better class of patients who indulge in small quantities of good quality liquor may be allowed to continue taking it in moderation, but an ordinary patient who is not expected to know his limits and who drinks common cheap liquor is advised to give it up altogether.

Clothes should receive particular attention. The patient must have sufficient woollen clothes to pro-

tect him from cold during the winter. In our experience monsoon months are worse on account of these patients walking barefooted in mud and water. These patients should take care that they do not go about in wet clothes nor let their feet remain moist.

Care of the feet is of great importance. Little cracks and ulcers do not heal quickly and by producing thrombosis in the surrounding vessels further interfere with the blood supply. The feet must be protected from minor injury, nails trimmed with great care and any fungus infection of the interdigital space receive proper treatment. Proper fitting shoes should be worn. Any infection of the feet, however minor, must receive prompt treatment from a qualified doctor.

Diet—Diet must receive special attention. Most of the patients are ill-nourished and suffer from malnutrition. Deficient diet is probably a contributory factor in producing degenerative changes in the blood vessels. The patient is advised to have a properly balanced nourishing diet, at any rate until the state of malnutrition disappears and the general health becomes normal. He is advised to have fluids freely.

Exercise—If there is no infection or ulceration of the limb the patient is not put to bed. He is allowed to go about his normal pursuits, provided he does not go to the length of having intermittent claudication and fatigue. Buerger's exercises in which the patient lifts his limb high, then brings it to horizontal and then brings it down in a dependent position each for one minute three or four times every six hours, are helpful in opening up the collateral circulation.

Vasodilator and sedative drugs—A large number of vasodilator and sedative drugs have been used from time to time but the fact that such a large number of drugs have been tried in itself indicates that so far no ideal drug has been found. It is not possible in this limited space to discuss all the drugs. A few which we have found useful are tolazoline hydrochloride, papaverine hydrochloride and tetraethyl ammonium salts. Tolazoline hydrochloride is the most popular drug these days. The dose is 25-50 mg. three times a day with comparatively good results. Papaverine hydrochloride, an alkaloid of opium, in doses of gr. ½ to 1 has been used for a long time. It is very effective when given intravenously and repeated every six hours in severe cases. When given by mouth it is combined with sodium phenobarbitone and prescribed in a capsule.

Tetraethyl ammonium chloride has been more extensively used for hypertension. When used in this condition it has to be used with great care as some patient may have serious drop in blood pressure. It is given intravenously 100 mg. to 500 mg. in 10 per cent solution or intramuscularly 1 to 1½ g. Its use is restricted to hospital patients who can be kept under observation.

Of the sedative drugs we have found codopyrine or aspirin with bromides and codeine sulphate very helpful. We give these drugs freely so that the patient is not allowed to have any pain, if possible.

As long as the patient is comfortable with this line of treatment, operation need not be advised. He is kept in hospital for a week or two to assess the benefit of treatment and during this period he is submitted to a careful examination of the cardiovascular system including an electrocardiography and examination of the fundus. If the patient does not get relief under this treatment, and provided his general condition is such that otherwise he is fit for normal pursuits of life by way of freedom from diseases like cardiac insufficiency, nephritis or other incapacitating disease, an operation of some kind as mentioned below should be considered.

SURGICAL TREATMENT:

Sympathectomy—The principle of the treatment by this operation is to remove the vasoconstrictor action of the sympathetics. The collaterals open up and the blood supply of the part is improved. All except those with very advanced organic disease or established gangrene derive benefit from the operation. The blood supply of the skin improves more than that of the muscles and, therefore, skin ulceration heals up promptly if the blood vessels are capable of dilatation after sympathectomy. Those with marked intermittent claudication may not be cured of this condition completely but their walking distance is improved and rest pains are generally abolished. In the upper limb coldness of fingers and hands and spasms disappear. The patient feels immediate and dramatic improvement in cases of upper limb affections in contrast with those in the lower limb in whom the improvement is appreciated in course of time.

For the lower limb the sympathetic chain with 2nd, 3rd and 4th ganglia is removed on both sides. In case of the upper limbs the stellate ganglion is neither removed nor crushed. The thoracic chain is divided below the third spinal nerve and the preganglionic fibres for the 2nd and 3rd spinal nerves are divided close to the intervertebral foramina.

Reconstruction Operations—Theoretically the treatment by replacement of the obliterated part with a graft obtained from the patient himself (autograft) or from a recently dead person (homo-

graft) should be ideal. In practice, however, the patients who are suitable for this treatment are few. Either the disease is too widespread for replacement, or if the disease is limited, the anastomotic channels open up and satisfactory circulation is restored spontaneously. The suitable cases are those in whom the disease is in a small segment but the obstruction so severe as to produce marked symptoms of impaired circulation. The patient should be free from serious general disease so that he lives long enough to enjoy the benefit of the operation.

If the graft is taken from the patient himself it is his great sephanous vein which is grafted upside down because of the valves in it. This is the only operation possible if there are no facilities of arterial graft bank. For storing arterial grafts low temperature refrigeration is required. Lengths of all sizes of arteries including the aorta are removed from persons dying recently of accidents and who had no disease before death. These arteries are quickly frozen and preserved at temperatures ranging from $-70°$ to $-79°C$. These arteries can be used immediately whenever required.

In case of large arteries like the common femoral and iliac arteries, if the disease is local the clot can be removed along with the intima through a longitudinal incision in the artery. The artery is sutured. The blood stream under pressure prevents thrombosis in large vessels and use of anti-coagulants locally or parenterally during or after operation is not necessary. Cases suitable for this operation and for arterial grafting are not many.

Nerve block and tenotomy of tendo achilles—Local nerve block by injection of the nerves with alcohol or by crushing and division of the nerves has been practised for relief of pain. Unfortunately if there is a benefit it is short-lived and cases who might derive benefit from this operation are usually unfit for this operation because of local ulcers, infection or gangrene. It may be tried in cases who have no local contra-indication to block the nerves and other major operation is contra-indicated.

Tenotomy of the tendo calcaneus (Achilles) is done with the idea of inactivating the muscles of the calf so that when the patient walks, these muscles are inactive. The patient can walk longer distance without claudication. There is weakness of the limb after tenotomy. This operation is better than neurectomy. Both nerve block and tenotomy operations are now getting in disfavour because the benefit is not predictable and not prolonged enough for the patient to have any satisfaction.

Amputations—It may be possible to do only local amputation of the gangrenous toe after the anastomotic channels have been opened up by sympathectomy. In cases where the gangrene has already extended in the foot or leg amputation below or above knee has to be performed. It is essential that amputation is done through parts that have satisfactory blood supply otherwise healing of the wounds presents a great problem. Most of the cases with organic vascular disease need amputation later even if sympathectomy has been done with benefit. If the limb can be saved for some years more any surgical treatment is worth the trouble.

PORTAL CIRRHOSIS—DIAGNOSIS AND MANAGEMENT

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Cirrhosis of the liver is a fairly common disease and portal cirrhosis is the commonest type. Malnutrition, amoebiasis, kala-azar, and malaria may be the possible factors for the prevalence of the disease in our country; alcoholism, on the other hand, is not important. Infective hepatitis is a recognised aetiological factor. Some of the cases of 'tropical splenomegaly of unknown aetiology' may ultimately develop portal cirrhosis of the liver.

Cirrhosis of the liver is usually diagnosed on clinical grounds. In the early stage of the disease before ascites has developed or there has been an episode of gastro-intestinal bleeding, it is often very difficult to make a definite diagnosis. The patient, an adult or a middle aged person, complains of anorexia, flatulent dyspepsia, constipation or sometimes attacks of diarrhoea. A few patients may complain of attacks of pain in the abdomen particularly in the right hypochondrium and a few others may get bouts of fever. The patient usually complains of weakness and he loses weight. There may be slight anaemia. Jaundice and oedema are usually absent. Spider angiomata should be looked for over the face and trunk but these are very uncommon in patients of our country. The liver may be enlarged, firm and slightly tender.

Liver function tests may show abnormal results. Determination of total plasma protein (6·5—7·5 g. per cent), albumin (4—5·5 g. per cent), globulin (1·2—3·0 g. per cent) content of blood may be helpful. There is fall in albumin and rise in globulin content of the blood. Thymol turbidity

(0—4) units) is increased. Bromsulphalein is retained longer in blood. These abnormal results are however those of hepatic dysfunction and not particularly of cirrhosis of the liver. Liver biopsy helps but it is not always a feasible procedure. It has its risks and limitations.

In the early stage of cirrhosis of the liver the disease has to be suspected on clinical grounds. If contributory factors like malnutrition, alcoholism, or previous attack of infective hepatitis are present, they would be helpful points in favour of the diagnosis. It is however very important to make a diagnosis at this stage, as with proper therapy we will be able to give maximum benefit to the patient and the progress of the disease can often be checked.

In the pre-ascitic stage, the disease is usually mistaken for chronic amoebiasis. In the latter disease, the caecum and sigmoid colon are thickened and tender. Examination of the stools is helpful and anti-amoebic treatment gives relief.

In the established stage of the disease the clinical features are usually due to hepatic dysfunction, portal hypertension and secondary infection. Those due to derangement of hepatic functions are weakness, emaciation, oedema, vascular spiders and oliguria. Portal hypertension gives rise to haematemesis and/or melaena, prominent veins on the anterior abdominal wall with flow of blood away from the umbilicus and an enlarged spleen. Both the factors are most probably responsible for anorexia, flatulent dyspepsia, constipation and ascites. Secondary infection may give rise to dysentery, bronchitis, and tuberculous infection of the lung, pleura and peritoneum. At this stage, the liver is not usually palpable in the right hypochondrium. Jaundice is never a prominent feature in portal cirrhosis. Even in the ascitic stage it may be difficult to make a definite diagnosis and the following diseases may produce confusion.

Nutritional Oedema—In this condition there is generalised oedema, whereas in cirrhosis of the liver, the face, upper limbs and trunk escape. Factors leading to nutritional deficiency like poor economic condition, attacks of diarrhoea or dysentery, and low intake of food particularly the proteins are usually present. Veins are not prominent over the anterior abdominal wall and the spleen is not enlarged and there is no history of gastro-intestinal bleeding. The liver is usually enlarged, soft and slightly tender due to fatty infiltration. Total protein and particularly the albumin content of blood are markedly diminished without corresponding rise in the globulin fraction. A typical figure would be total protein 3·5 g. per cent, albumin 1·5 g. per cent, and globulin 2·0 g. per cent. Diagnosis is usually settled soon by observing the patient for sometime, as there is prompt and marked improvement with high protein, salt restricted diet and mercurial diuretics.

Tuberculous Peritonitis—There is fever and tachycardia. Uncomplicated cirrhosis of the liver on the other hand is an afebrile disease. The patient may complain of pain and tenderness in the abdomen and it may have a doughy feel. Sometimes tuberculous glands or matted omentum may be felt. Features of portal hypertension are absent. The ascitic fluid has the character of an exudate (protein content above 3 per cent and large number of lymphocytes).

Tropical Splenomegaly of Unknown Aetiology—It may after several years give rise to portal cirrhosis (splenomegalic cirrhosis). In portal cirrhosis, the spleen is not usually enlarged for more than three fingers' breadth below the costal arch, but in tropical splenomegaly of unknown aetiology the spleen is very big and may reach the pelvis.

Peptic Ulcer—When haematemesis or melaena is the initial symptom of cirrhosis of the liver, the disease may be mistaken for peptic ulcer. The typical symptomatology of peptic ulcer and remissions and recurrences of the symptoms are absent in cirrhosis of the liver. In peptic ulcer, clinical features of portal hypertension are absent. It may however be noted that a patient may suffer from both the diseases.

Congestive Cardiac Failure—It may be differentiated from cirrhosis of the liver by the presence of dyspnoea, engorged neck veins, enlarged tender liver and cardiovascular abnormalities like hypertension, valvular defects, arteriosclerosis etc. In mitral stenosis, a mitral diastolic murmur is present. In chronic constrictive pericarditis the neck veins are markedly engorged and the liver is always enlarged. There is ascites but no prominent veins on anterior abdominal wall or splenomegaly. The venous pressure is persistently raised. The heart is usually small and quiet.

Management

PROPHYLAXIS: The treatment of cirrhosis of the liver is in its prevention. Alcoholism is not a big problem in our country. Malnutrition or undernutrition in the population should be corrected. Patients suffering from infective hepatitis should be properly managed. Rest and proper diet are our main standby and convalescence from the disease should never be hurried. In tropical splenomegaly splenectomy often produces marked improvement in the patient and may prevent hepatic changes. Till we know the aetiology of this type of splenomegaly and its prevention, splenectomy may have to be advocated in suitable cases.

The liver has a great reserve and recuperative power and one should remember that cirrhosis of the liver is not always a lost battle at least not in the early stage. It is known that cirrhosis may remain latent and a person may die of some other disease.

Early Stage—Contributory factors of the disease like unbalanced or poor diet, or alcoholism, if present, should be corrected. The patient should be an absolute teetotaller and drugs containing alcohol should be forbidden. There should be proper amount of rest and physical exercise. Diet should be simple, balanced and non-irritating, and should contain sufficient amount of protein, carbohydrate and vitamins. To an adult patient, 100—125 g. of protein, 400 g. of carbohydrate and 50 g. of fat may be given. There should be sufficient amount of animal protein in the form of fish, meat, egg, milk and casein. Lipotropic factors like choline (3—6 g. a day), betaine (3—6 g. a day) are often given and they are expected to do some good in fatty infiltration of the liver. Other lipotropic agents are liver extract and vitamin B_{12}. All of them used at the same time may have synergistic action.

Established Stage—An established case of cirrhosis of the liver is usually a progressive disease, but with proper therapy the downward course of the disease may be retarded and the life of the patient prolonged and in most cases made useful and comfortable. The usual causes of death in cirrhosis of the liver are hepatic failure leading to cholaemia and haematemesis and/or melaena. Secondary complications can usually be controlled by specific drugs. The chief trouble of the patients is ascites, and anorexia, flatulent dyspepsia, constipation, oliguria and weakness.

Treatment of Hepatic Dysfunctions—All possible measures should be adopted to prevent the onset of hepatic failure. The patient is kept on bed rest. Diet should be liberal and should contain sufficient protein, carbohydrate, and vitamins and moderate amount of fat. The daily calorie intake of an adult should be about 3000. Preparations of predigested proteins combined with carbohydrates are available and they may be added to the diet, one to two tablespoonfuls three times a day would be a good dose. One to two tablespoonfuls of flavoured brewer's yeast or vitamin B-complex substitutes together with a vitamin supplement containing all synthetic vitamins in a potent form should be given.

Methionine is often used when there are fatty changes in the liver. The usual dose is 1 g. three times a day. Betaine (3—6 g. daily) and/or choline (3—6 g. daily) with crude liver extract (2 c.c. intramuscularly, at first daily, later on on alternate days, twice a week or once a week) and vitamin B_{12} 25 μ g. intramuscularly may be given with advantage. For fear of untoward reactions and even death, liver extract or protein hydrolysates should not usually be given intravenously.

When cholaemia sets in, the end is not far off. It may appear as an end-result of hepatic dysfunction or be precipitated by a bout of severe haematemesis or melaena. Abdominal paracentesis may very rarely precipitate it.

Haematemesis and Melaena—Patients suffering from cirrhosis of the liver sit on a volcano and one never knows when it will erupt. Suddenly, there may be severe haematemesis or melaena and the patient may die from it. We are helpless in foretelling the onset or outcome of the haemorrhage. Various surgical measures like portacaval or linorenal anastomosis and ligation of hepatic and splenic arteries have been tried to lower portal pressure. The operations carry risk to life and they are not always successful in permanently lowering portal hypertension. There are no known medical measures for lowering portal pressure. Once haematemesis or melaena starts, sufficient blood should be transfused. Vitamin K should be injected. Morphine should never be administered as the liver is out of gear ; pethidine may be used instead to quieten the patient. It is not known, how much benefit is accrued from vitamin C, calcium and other coagulant drugs, but they are used as a routine.

Secondary Complications—They should be treated as they arise. Specific therapy should be instituted for tuberculous diseases of lungs or abdomen, amoebic or bacillary dysentery.

Ascites—The first abnormality to draw the attention of the patient is ascites and it troubles him most. It takes away his appetite, produces a very uncomfortable sensation in the abdomen and makes him breathless. Of all the factors responsible for its production, hypoproteinaemia and portal hypertension are probably the most important ones. If the ascites is marked and produce respiratory embarrassment, abdominal paracentesis should be done and fluid removed slowly. It should be noted that paracentesis removes large amount of protein from the body and may rarely precipitate cholaemia. Hence it should be avoided as long as possible. Diet should contain large amount of assimilable animal protein and be poor in salt content. Mercurial diuretics are very helpful. Injectio mersalyl 0·5 to 2·0 c.c. may be given intramuscularly once or twice a week for months or years. If it does not produce good response, the dose should not be increased beyond 2 c.c., and the drug may have to be withheld for a period. The action of the drug is usually poten-

tiated by ammonium chloride. It is given in doses of gr. 30 two hours before the injection of the diuretic. In cases of cirrhosis of the liver with marked hepatic damage ammonium chloride should not be given as it may precipitate cholaemia. The diuretic, as is well known, is contraindicated if urine contains fair amount of albumin, red cells or casts. Anorexia and flatulent dyspepsia usually improve with diminution of ascites. Oliguria is best controlled by salt poor diet and mercurial diuretics. Constipation is treated by laxatives like senna, liquid paraffin or magnesia.

In conclusion, it may be repeated that the contributory factors of cirrhosis of the liver should be eradicated. The disease should be diagnosed in the earliest stage, and proper therapy instituted to check its progress. In the advanced stage, though the disease cannot be cured, enough can be done to make the life of the patient comfortable and useful and it is in this stage, the patient needs our attention, sympathy and encouragement most.

SPECIAL ARTICLE

AETIOLOGY OF RHEUMATIC FEVER

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Rheumatic fever "ranks first as cause of death in children and adolescents 5-19 years of age" and it is "the leading cause of heart disease below the age of 40 and it is also a major cause of heart failure in older age group" (Holt and McIntosh, 1953). About a million of people in the United States of America have suffered from rheumatic fever according to the statistics of the Metropolitan Life Assurance Company ; about 2 lacs of people die of rheumatic heart disease every year in the United States of America. "Some 3 or 4 decades ago, it was the strong belief that rheumatic fever did not exist in India and when actual cases were seen in India, it was believed that the affection must have been acquired in the hill stations. The opinion has since been modified to a great extent" (Banerjee, 1950). Every physician whether connected with a hospital or not, finds that a substantial portion of his patients is afflicted with rheumatic affection. It is therefore desirable that serious attention should be directed towards the prophylactic and curative aspects of the disease. Any scientific approach towards the control and eradication of a disease requires the full appreciation of its aetiology and an attempt has been made for a review of the position of the works in the field of finding out the aetiological factor in rheumatic fever.

Inspite of the large volume of work in this sphere, one must admit that the last word is yet to be pronounced. The theory of allergy claims a large number of supporters but other theories are still holding their own. The theories may be considered under the following heads: (1) Infective theory ; (2) Allergic theory and (3) Maladaptation theory.

Infective Theory

Bacteria—Small diplococci were isolated from the heart's blood and also from the tissues of 8 cases of acute rheumatic fever and these organisms were incriminated to be the aetiological factors. They were temed the *Diplococcus rheumaticus*. But evidences are accumulating regarding the streptococci having some role to play in the genesis of rheumatic fever.

Different strains of non-haemolytic streptococci have occasionally been recovered from the blood of patients with acute rheumatic fever by various workers but "their significance is uncertain" (Fairbrother, 1951).

Isolation of green-producing streptococci of low virulence in 50 per cent of cases of acute rheumatic fever and production of nodules in the myocardium of experimental animals by inoculating these organisms, has been achieved by many.

Streptococcus pyogenes has been recovered from the heart valves and pericardium of rheumatic patients and the organisms were of the same strain as those isolated from the throat during life.

It will be seen that the different bacteria, and of the streptococci, different strains have been claimed to be the aetiological factors. Fairbrother (1951) remarks "our present conception of human streptococcal infection is based on the unitarian hypothesis, which postulates that the various diseases may be caused by any strain of streptococci (Group 'A'). . . . The different clinical manifestations are due, on the one hand, to variations in one or more of the offensive weapons of the organisms and on the other, to changes in the susceptibility of the infected individual".

Virus—Filter-passing organisms were recovered from the joint cavity of the rheumatic fever cases and arthritic changes were produced in mice by the same type of organism isolated from mice. Bodies resembling the elementary bodies of virus have been found in the pericardial exudate in acute rheumatic fever which can be agglutinated by the serum of the patients but have not yet

been proved to be a virus nor inoculation into animals produced the lesion. The virus may be primarily responsible or *Streptococcus haemolyticus* may lower the resistance of the host thus enabling the virus to enter the body and assume active character.

The antagonists of the theory of infection hold that the presence of such a small number of organisms in blood and tissue and that in occasional cases of acute rheumatic fever do not uphold the theory of infection. Moreover, the tissue-reactions in acute rheumatic fever are totally dissimilar in almost every respect from those in the tissues of susceptible subjects infected with pyogenic streptococci. Again, the disease manifests after an interval of about 3 weeks of streptococcal sore-throat and antibiotics and chemotherapeutic agents to which these organisms are susceptible have no effect on the course and intensity of the disease. Hence, the cause of the disease should be sought somewhere else.

Streptococcus haemolyticus β, Group A is responsible for initiating the rheumatic process. The body of evidences incriminating streptococcus as the responsible organism is increasing. Epidemiology of rheumatic fever follows closely that of streptococcal sore-throat, the former occurring about 3 weeks later. Rheumatic fever is seen after known streptococcal pharyngitis and recurrences frequently occur after streptococcal infection of the upper respiratory tract. Blood of rheumatic patients contains streptococcal antibodies in unusually high titres—agglutinins, antihaemolysins, complement-fixing antibodies precipitins, antifibrinolysins and an antibody to the C-reacting protein.

It is however a curious fact that Group A β haemolytic steptococci which do not involve the respiratory system such as erysipelas are rarely responsible for initiating the disease. This point has not yet been explained.

Types 4 and 22 of Group A β haemolytic streptococci are devoid of hyaluronic acid capsules unlike the other types and are capable of producing a large amount of hyaluronidase which can hydrolyse the muco-polysaccharide hyaluronic acid whereas other types produce only a small quantity of the enzyme (Nelson, 1950). This depolymerising action of hyaluronidase in the connective tissue hyaluronic acid results in facilitating easy dispersal of 'toxin' in the tissue. This property of producing more hyaluronidase tends to give an impression that the types 4 and 22 of Group A β haemolytic streptococci should be more effective agents in initiating rheumatic fever ; but it is not so. The "Epidemics due to type 4 and to type 22 have been described as relatively ineffective in initiating rheumatic recurrences" (Holt and McIntosh, 1953). "What part this (hyaluronidase) enzyme plays in favouring the invasion of the tissues by streptococci or what part the hyaluronic acid in the capsular substance plays in protecting the organism from the cells or antibodies in the tissues of the host is still the subject of discussion. The development of capsules and hyaluronidase formation appears to be mutually exclusive. ". . . . the relation between capsule formation and virulence has still got to be found" (Wilson and Miles, 1948).

Allergic Theory

Incidence of rheumatic fever after a lapse of few weeks of streptococcal infection and the isolation of a small number of these organisms and that too in only a small percentage of rheumatic fever cases have led to the conception of the theory of allergy. This idea has been strengthened by the peculiar pathological changes with morphological similarity to some of the lesions of serum sickness. Eckert *et al* (1953) have shown increased permeability of capillaries in acute rheumatic fever just as is seen in allergic manifestations. Attempts have been made to produce rheumatic lesions in rabbits by repeated injections of horse serum and though the general appearance of the lesions resembled those in rheumatic fever, there were important deviations from rheumatic pathology. The lesions involving the collagen tissue were very limited and acute polyarteritis and even acute nephritis were produced in many cases. Since in the natural course of the disease, a man is liable to infection with different serological types of haemolytic streptococci. On experiments with different types of *Streptococcus haemolyticus* the result was the production of pathological lesions closely resembling those in the heart muscles in the rheumatic patients and that polyarteritis and nephritis could not be demonstrated. It therefore tends to show that allergic phenomenon in rheumatic fever is due to the repeated infections with different strains of Group A β haemolytic streptococcus.

"It has been suggested that of the two types of lesion, proliferative (nodules) and exudative (oedema), the former is due to the implementation of the bacteria and the latter is the manifestation of allergic phenomenon. So-called attacks of rheumatic fever may be merely the appearance of exudative feature in persons long subject to the proliferative form of the lesions" (Boyd, 1950).

Repeated infections with Group A β haemolytic streptococci do not constitute the only factor responsible for the development of rheumatic fever.

Out of the large number of people suffering from streptococcal sore-throat only about 2 to 5 per cent get the disease. On the other hand 50 per cent of the rheumatic patients suffering from streptococcal sore-throat get a recurrence of the malady. Again the immunological response to streptococcal infection in rheumatic people differs from that of non-rheumatic people. The antibodies in the former appear late and gradually reach the maximum and they stay longer in the body. These findings suggest that the tissues of the rheumatic people are unlike those of the non-rheumatic.

Large number of observations made by different workers in this field have shown that the familial incidence of rheumatic fever is high. Two factors may operate either alone or together in the production of high familial incidence—either the tissues may have a greater predisposition to rheumatic fever or the living together may facilitate greater contact infection. Greater percentage of siblings of rheumatic people suffer from this disease. Relatives of rheumatic people have a greater incidence than those of the non-rheumatic living in identical conditions. Presence of rheumatic patients in a family, of course, ensures greater likelihood of being infected with the causative organism.

Regarding the racial susceptibility, there is no unanimity of opinions, most workers deny the existence of any racial predisposition to the disease. Nelson (1950) remarks "The available data indicate that the attack rate is particularly high among the Irish living in the vicinity of New York City and New Haven. In Negroes, the attack rate tends to be lower than average, but the case fatality rate is higher than in the white race".

The incidence of disease before the age of 3 is very low but high between the age of 5 and 15 ; the question of inherited immunity has not yet been completely solved.

Higher incidence of rheumatic fever amongst the unprivileged class of people drew the attention of some of the workers towards the effect of nutritional state in the causation of the disease. Overwhelming opinion is against deficiency of any definite factor being a prediposing cause ; poverty only leading to overcrowding with greater liability to cross-infection in a class of people with general lowered vitality. But vitamin C deficiency has been observed in acute rheumatic fever and food deficiency specially in vitamin C predisposes to the development of the rheumatic state.

The protagonists of the theory of allergy as a result of repeated attacks of sore-throat from Group A β haemolytic streptococci of different types in people with a predisposition to the rheumatic state, hold that the disease starts from the initial stage of streptococcal sore-throat. There are 4 phases, constituting rheumatic fever : Phase 1 consists of the stage of streptococcal sore-throat, which is followed by the latent period of one to three weeks called phase 2. Phase 3 is the active rheumatic period ranging from the subclinical inflammation to the fatal toxic state of a period of three weeks to two years, being about six months in 75 per cent of cases. This is followed by phase 4, in which there is cessation of rheumatic activity which may be permanent or temporary.

During the stage of sore-throat (phase 1) the streptococci multiply and either the bacterial cells or their products of metabolism which form the antigen, circulate in the blood and lodge on the organs of stress—the supporting collagen tissue of the body specially the heart and joints (phase 2). The reticulo-endothelial system in response to the antigen produces the antibodies which circulate in the blood and react with the antigens toxallergens —on the tissue cells as a result of which tissue damage occurs and pharmacologically active substances, mainly histamine-like substances but probably also adenosine and acetylcholine are liberated. These substances are responsible for the changes found in the tissues in cases of rheumatic fever (phase 3).

Doubts have been cast on the streptococcus Group A β haemolyticus being the sole toxallergen in the causation of rheumatic fever. It has been found that dysentery, sandfly fever and malaria could produce recurrence of rheumatic fever and even trauma could do so. Many investigators think that as infection with streptococci is so common, rheumatic fever has wrongly been associated with streptococcal infection. To explain these anomalies, it has been held that different substances may have a common antigenic element and that "certain tissue protein or more probably tissue muco-polysaccharide such as hyaluronic acid, may possess common antigenic character with constituents of certain bacteria, so that if antibodies be formed against the latter, they might at the same time react with the former to the detriment of the host. Another hypothesis to explain the allergic origin of rheumatic fever is that the patient's own protein undergoes some changes due to unknown reasons and becomes antigenic which then produces antibodies and an antigen-antibody reaction takes place detrimental to the health of the patient.

Hubbles (1952) summarises by saying that "the reaction to the infection is a peculiar antigen-antibody relationship dependent upon a constitutional disposition which is not related to the other allergic disorders. The familial tendency is well established. . . . Ascorbic acid depletion is well

marked during the active and also convalescent stages. Long suggests that the adrenal cortex is implicated in this specific reaction".

"Despite this and other lines of argument there has been no conclusive demonstration that rheumatic fever is due to an antigen-antibody reaction nor has any particular component or product of the streptococcus yet been incriminated as an antigen, toxin or enzyme, responsible for the disease" (Holt, 1950).

Theory of Maladaptation

Selye (1954) has introduced the conception of adaptation syndrome in clinical medicine and diseases are conceived in terms of lack of adaptation to the different types of stressers. But there are many gaps which are yet to be bridged over. A.C.T.H. and cortisone are very often valuable in the management of rheumatic fever and A.C.T.H. and corticoides are the principle hormones concerned in the adaptation syndrome.

From the injured local 'target' area—the inflamed throat—in which the stressor Group A haemolytic streptococcus is multiplying and doing damage, the 'first mediator' travels upto the anterior pituitary gland from which A.C.T.H. is liberated which in turn stimulates the adrenal cortex liberating mineralocorticoides M-C or 'prophlogistic corticoides' P-C, along with glucocorticoides—G-C or 'antiphlogistic corticoides' A-C. The former is responsible for the production of 'replicas' of 'inflammatory rheumatic diseases... as well as arthritic changes resembling, in experiments those of acute rheumatic fever" while "Gluco-corticoides inhibit inflammatory rheumatic-like changes" (Selye, 1954).

Diseases of adaptation can occur if there is any quantitative, qualitative or relative change in these hormones with or without any 'conditioning' or 'permissive' factor operating. Since all people subjected to the stressor *Streptococcus haemolyticus* do not suffer from rheumatic fever, one or more of the above factors must be the determining factor, as a result of which the collagen tissue in the body shows the stage of 'exhaustion'. Nothing is known definitely about the influence of any 'conditioning factor' in the causation of this exhaustion. Since the incidence of rheumatic fever is higher in rheumatic families, it is very likely that a hereditary predisposition i.e., a hereditary 'conditioning factor' operates in the incidence of the disease. There is some evidence that 'the occurrence of rheumatic fevers in the children approximated the pattern of a single autosomal recessive gene except in the matting of two parents with the disease" (Gray, *et al*, 1953). Nutritional deficiency specially that of vitamin C, may be another conditioning factor. "It is possible that some part of the syndrome recognised as rheumatic fever is due to non-specific effects, but whether the cellular phenomena, the inflammatary or phlogistic changes which clinically appear to be influenced by both cortisone and A.C.T.H. and which account for the crippling cardiac disabilities, are to be regarded as entirely non-specific reactions, independent of the haemolytic streptococci but merely related to the infection as stressor agent, it still appears premature to suggest" (Hartfall, 1954). Weiner (1953) opines "that no evidence is given by the method of examination to suggest any hypofunction of adrenal cortex or interference with pituitary adrenocortical relationship in rheumatic fever". Hence of the factors determining the stage of exhaustion in adaptation syndrome, we are left with the conditional factors alone which probably play the principal determining agent in the development of the rheumatic fever.

Kellgren (1952) has introduced a new idea in the domain of rheumatic diseases as a whole. From a study of a pathological changes in these diseases he concludes that these diseases occur at the molecular level; the intercellular substances of the supporting tissues in various organisations is made up of collagen-polysaccharide complexes and due to some causes, these complexes get loosened in inflammatory rheumatic diseases, as a result of which the collagen material gets disintegrated into simple peptides which diffuse out of the damaged tissue and may be responsible for the various toxic and inflammatory manifestations of the diseases. When large amounts of these complexes get disintegrated, polysaccharide component replaces the damaged tissue "thus producing the fibrinoid tissue".

This concept does not say about the 'why' of the disintegration of the collagen-polysaccharide complexes; it only directs the attention of the workers in this field towards the molecular level.

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CASE NOTES

ARRHENOBLASTOMA OF THE OVARY

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Ovarian tumours which function and produce hormones causing certain secondary sexual changes have always aroused interest. Among these are the granulosa cell tumours which cause development of secondary sexual characters in young children and arrhenoblastomas which cause masculinization or defeminization. Masculinizing tumours of the ovary occur less frequently than do granulosa cell tumours. These tumours arise from undifferentiated germ cells which are not utilized during embryonic development but nevertheless retain their potency. Under certain conditions, they begin to proliferate and then exert an influence towards maleness later in life. Some of these neoplasms exert no hormonal effects and others of diverse histological patterns cause masculinizing symptoms.

The case reported below showed all signs of masculinizing symptoms such as amenorrhoea, hirsutism, flattening of breasts, change in voice, and enlargement of clitoris.

CASE REPORT

Mrs. S., aged 25 years, was admitted in the Civil Hospital, Belgaum, on 24-4-1954 with history of amenorrhoea of 28 months and a lump in the abdomen for the last one year. There was nothing relevant in previous or family history. Her menstrual history was very regular in the past. She had only one daughter seven years old ; living and healthy.

On examination she was slim and tall and had a hairy growth on her upper lip and chin. There was also some hairy growth on the chest. Her pubic hair was of male type in distribution. Her facial expression was slightly on the male side and the voice a little hoarse. The breasts were absolutely flat, with hardly any breast tissue.

An irregular lump firm in consistency, arising from the pelvis and rising upto about one finger above the umbilicus was palpable. The lump was partly mobile. Vaginal examination showed well-marked hypertrophy of the clitoris about one and a half inches, with a well-developed prepuce and glans. Bimanual examination, revealed a soft cervix and the uterus could not be made out separately from the tumour, which was in the middle. Fornices were clear. Uterine sound passed in for about four inches and a half.

Blood pressure was 108/70 mm. of Hg.

Investigations—X-ray report revealed no evidence of foetus in the abdomen. Examination of blood and urine showed no abnormality. No facilities were available for estimation of urinary ketosteroids.

A tentative diagnosis of arrhenoblastoma of the ovary was made.

On 3-5-1954 under spinal anaesthesia, the abdomen was opened by a median subumbilical incision. A greyish green tumour was found, slightly adherent anteriorly to the abdominal wall. The tumour was found to be arising from the right ovary, and was removed without any difficulty. The uterus was a little enlarged, but the left tube and the ovary were found to be quite normal. The abdomen was closed as usual. The post-operative period was uneventful. The patient was discharged on 28-5-1954.

She was seen again on 30-8-1954, after about four months, since the tumour was removed. She had changed her appearance and was looking absolutely feminine. Hirsutism from the face had disappeared. Her voice had become more high pitched. She gave history of having three menstrual periods since her discharge from the hospital and the menstrual flow according to her was rather profuse. On examination, the hair from the chest had disappeared. The breasts had a little breast-tissue in them though not well-formed. The pubic hair distribution was now absolutely feminine. On vaginal examination, the hypertrophy of the clitoris was still there, it being about one and a quarter inches long. Bimanual examination revealed a normal uterus and cervix and the fornices were quite clear.

Description of the Tumour—The tumour $8\frac{1}{2}'' \times 11'' \times 6''$ was spherical in shape with lobulations. (Fig. 1, *vide* Plate). It was partly cystic and partly solid and was of greyish colour. It had a well-marked capsule, which was discoloured at places. On cutting open, it was found to be mostly multilocular. The fluid varied from pale watery, to chocolate colour. The loculi varied in diameter from 1" to 4".

Pathological Report—The histological examination showed arrhenoblastoma of intermediate variety—with imperfect tubule formation and group of interstitial cells.

Discussion

The case reported is that of an ovarian tumour, associated with signs of masculinization such as amenorrhoea, hirsutism, change in voice, regression of breast tissue and enlargement of the clitoris. The histological diagnosis of the tumuor as arrhenoblastoma and the improvement in the patient, such as appearance of menstruation, disappearance of hirsutism etc., after removal of the tumour showed that the masculinizing symptoms were produced by the ovarian tumour. The not so marked regression of the enlarged clitoris was probably due to the tumour being of long standing.

In differential diagnosis one has to rule out basophilic adenoma of the anterior pituitary, adrenal cortex lesions and pineal tumour.

Summary

A case of arrhenoblastoma of the ovary accompanied by signs of masculinization is reported. Removal of the tumour led to regression of all the changes except hypertrophy of the clitoris.

Acknowledgment

I am very much thankful to Dr. A. F. Merchant, Civil Surgeon, Belgaum, for kind permission to report this case.

POSSIBLE CONGENITAL INFECTION OF KALA-AZAR.

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Kala-azar rarely occurs in infancy in this country, though in the Mediterranean region 'Infantile Kala-azar' is well-known. In India the disease usually affects children above 5 years of age and adults (Napier, 1946). A case of kala-azar in a 6 month old infant whose mother contracted the disease during pregnancy, is reported here.

Case Report

History of mother's illness—Mrs. A. K. L. of Banaras married in December 1951. She resided with her husband in Burnpur for short periods viz., December 1951 to January 1952, May to July 1952 and September to October 1952. Apart from this she was all along resident in Banaras. Previous illness—none. Present illness—the patient stated that towards the end of October 1952 when she was in Burnpur she developed fever. She was pregnant 5 months at the time. The fever used to come on daily with slight chill and there was a daily remission. She received some mixtures and anti-malarial drugs without effect and left shortly after for Banaras. A blood count done at Banaras on 18-12-1952 showed W.B.C. 6000 per c.mm.; neutrophils—63 per cent, lymphocytes—36 per cent, basophils—1 per cent. Malaria parasites—none found; aldeheyde test—negative; urea stibamine test—positive + + +. Thereupon she was given 10 intravenous injections of urea stibamine every third day and complete remission of the fever occurred after the 4th injection till her confinement in February, 1953.

On Examination (26-9-1953)—Thin-built, but fairly well-nourished Bengali female aged 16 years, no anaemia or jaundice, the spleen was palpable 2 fingers below the costal margin (said to have extended to the umbilicus at the time of its maximum enlargement). The liver was palpable 1 finger. Blood examination showed Hb. 70 per cent, R.B.C. 3,500,000 per c.mm., W.B.C. 4,800 per c.mm., with normal differential count, aldehyde test and urea stibamine test were negative.

History of child's illness—The child was nursed by her mother from birth. She had slight fever from the 18th day (when the mother was also running a temperature) and this remitted in 2 or 3 days' time. The child was brought to Burnpur by the parents in May 1953 (at 3 months age) and continued to grow normally till the age of 6 months. On 14th September, 1953, rise of temperature was noticed which rose to about 100°F with cough and running from the nose. The fever touched normal in 2-3 days time but 3 days later she began running a daily temperature and a double daily rise of temperature was often noticed (Fig. 1).

On examination (26-9-1953). Well nourished, bright and active, 6 month old female child, abdomen slightly protuberant. Teeth—none erupted. Fontanelles closed. No icterus. No palpable glands. The spleen was enormously enlarged extending upto the iliac crest and firm. The liver was enlarged 3 fingers below costal margin. Lungs and heart—nothing abnormal; throat—normal; temperature—102·4°F, pulse 136 per minute; respiration—24 per minute; weight 16 lbs. Blood examination showed: W.B.C. 6,000 per c.mm. with normal differential count; malaria parasites—none; aldeheyde test—strongly positive (jellification and opacity within 10 minutes); urea stibamine test—moderately positive. Permission for marrow puncture was not obtained.

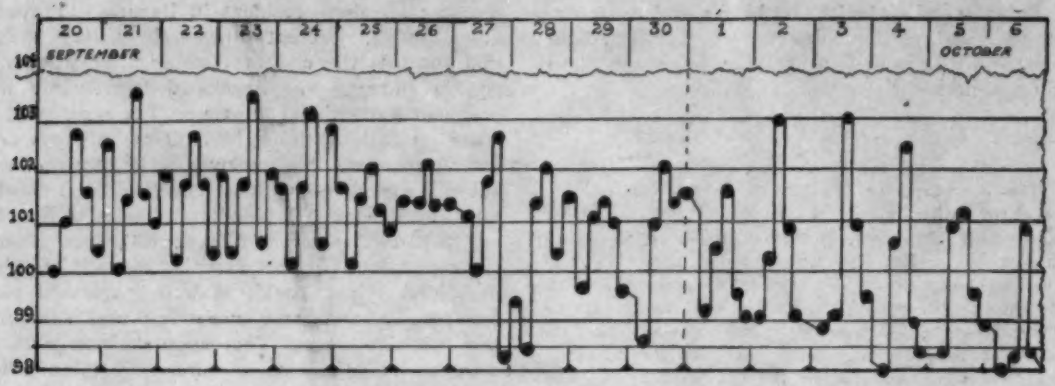

FIG. 1—TEMPERATURE CHART OF THE REPORTED CASE

Treatment and progress of the child. Though the diagnosis could not be confirmed by actual demonstration of the causative organism, the clinical picture and blood tests provided ample justification for the diagnosis of kala-azar to be made. Accordingly treatment with daily intramuscular injections of stibatin (20 mg/cc.) were given (total 18½ c.c.) No untoward reactions occurred, and the temperature remained normal from 22nd October till November 1953 when the temperature rose again. Accordingly stibatin injection was again commenced on 11-11-1953 and a total of 20 c.c. was given in this second course. The temperature reached normal on 18-11-1953 and the patient has continued to be afebrile since then. At the end of treatment the spleen and liver did not extend beyond 1 finger below costal margin. The child thus received a total of 38½ c.c. of stibatin (770 mg. antimony).

DISCUSSION

Though distinctly rare kala-azar does occur in infancy. Napier has reported a case in an infant of less than 8 months. The point of special interest in this case is that the mother contracted kala-azar in the fifth month of pregnancy, and her child manifested the disease when 6 months old. It should be noted here that kala-azar is not a common disease in Burnpur, and the few genuine cases that we have seen so far are all imported from outside. The infection of the child could therefore have either (*a*) been acquired at Banaras during the three months stay there or (*b*) acquired congenitally from the mother. As Sen Gupta (personal communication) has pointed out, the possibility of an acquired infection after birth at Banaras, which is an endemic area, would be hard to disprove in this case. At the same time the distinct rarity of acquired infections in early infancy leaves the possibility of congenital infection open. Low and Cooke (1926) reported a definite case of congenital kala-azar developing in the child of an English woman, who contracted the illness during her pregnancy in India and whose child was born in England. These writers have discussed in detail the question of congenital transmission of kala-azar. Since the parasite of kala-azar can be found in all body tissues and fluids they consider the following as theoretically possible methods of transmission of infection from mother to child :—(*a*) Through the placenta during foetal life or (*b*) at the time of birth, from perineal haemorrhage or vaginal or intestinal discharges infecting the baby as swallowed material or through the cut cord or abrasions on the body or (*c*) after birth through mother's milk or by infection transmitted during kissing. There appears to be however hardly any evidence in support of infection by ingestion or through abraded skin. In our case, though the child was exposed to infection by these routes, transplacental infection remains the greatest possibility, and detailed examination of the placenta, had it been done, could have furnished the clue. It is interesting to note that such direct transmission from mother to child is not in keeping with the current theory of transmission of kala-azar which postulates that an immediate host i.e. the sandfly is necessary for carrying on the infection.

No studies appear to have been made yet on the placenta in patients suffering from kala-azar to determine whether transplacental transmission can occur.

SUMMARY

1. A case of kala-azar occurring in a 7 month old infant whose mother had the disease in the 5th month of pregnancy, is described.

2. Clinical cure was obtained with a total dose of 38½ c.c. of stibatin (20 mg. per c.c.).

3. The possibility of congenital infection in kala-azar is discussed.

ACKNOWLEDGMENT

I wish to thank Dr. P. C. Sen Gupta, of the Kala-azar Research Department, School of Tropical Medicine, Calcutta, for his helpful comments on the case and

Lt.-Col. M. N. Khanna, Chief Medical Officer, Indian Iron and Steel Co. Ltd., Burnpur, for permission to report the case.

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LARGE OVARIAN CYSTS

B. DAYANANDA RAO, M.S. (ANDHRA),

Civil Surgeon, Warangal.

During the last five years, working in the districts of Nalgonda and Warangal (Hyderabad-Dn.) ovarian cysts and uterine fibroids of considerable size have been met with fairly frequently. In two cases the ovarian cyst outweighed the patient and presented certain interesting features worthy of record.

CASE REPORT

Mrs. R., a Koya woman, aged 30 years, was examined on 6-1-1954. She was an anaemic, emaciated and nulliparous woman presenting a huge abdominal swelling of 10 years' duration (Fig. 1). The

FIG. 1—CLINICAL PHOTOGRAPH BEFORE OPERATION.

girth round the abdomen was 5 feet. The swelling was uniform and tense with a distinct fluid thrill and no shifting dullness. A net work of big dilated veins were seen on the anterior abdominal wall. The patient weighed 218 lbs. Inspite of the deformity, the patient was able to walk unaided, though slowly. A clinical diagnosis of an ovarian cyst was made.

Blood pressure S/D—100/80 mm. of Hg. General condition was poor.

A small subumbilical mid-line incision was made under local anaesthesia and the diagnosis confirmed. The cyst wall was tapped and thick turbid fluid was let out slowly. It was hoped that her general health would improve after the paracentesis so that the entire cyst could be soon removed. But after waiting for 3 weeks it was found that she was not progressing satisfactorily. She was getting more and more emaciated and showed generalised oedema and the blood pressure (S/D) never went beyond 80/60. The cyst was also being rapidly filled up. It was presumed that the patient would not improve in general health until and unless the cyst was removed as its enormous secreting area was constantly draining her body fluids and protein reserve. Three weeks after the paracentesis, the huge cyst, now containing 8 gallons of fluid was completely removed under local anaesthesia. The patient's general condition was not satisfactory but still the risk had to be taken. Excepting for rather extensive adhesions between the cyst wall and the anterior abdominal wall, the cyst wall was free. It was a right ovarian cyst with a long pedicle and 4" in width. The patient withstood the operation remarkably well.

The conditions found on removal of the cyst were identical with those described by Last (1951). The patient had a smooth post-operative course and was discharged cured a month after the operation. She weighed 98 lbs. at the time of discharge and was in good general health.

DISCUSSION

Large ovarian cysts are invariably associated with general emaciation and low general health and this has been attributed to the physical pressure of the cyst on the intestines preventing adequate absorption. The loss of body protein into the cyst seems to be an additional factor. Removal of the cyst improves the general health quickly. Bearing this in mind, removal of the cyst should be undertaken as early as possible after the paracentesis—especially if the cyst is getting filled up rapidly.

Inspite of the long duration and huge size adhesions to the viscera are as a rule remarkably few. The operation is a simple and straightforward one. Huge cysts are invariably not malignant.

Local anaesthesia should be the method of choice.

SUMMARY

Large ovarian cysts are not uncommon in our country. Some points in relation to the management of such cases are discussed with particular reference to their effect on nutrition and general health.

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JOURNAL OF THE
INDIAN MEDICAL ASSOCIATION

CALCUTTA, MARCH 1, 1955

ANTIHAEMOLYSIN AND RHEUMATIC HEART DISEASE

Streptococcus haemolyticus is the causative organism of a variety of diseases. The type and the virulence of a particular infection depend on the particular strain. Todd[1] has discussed the methods of cultivation of the specific organisms and study of various strains obtained from different types of infection—scarlet fever, erysipelas, puerperal sepsis, tonsillitis and rheumatic heart disease. Coburn and Pauli[2] also studied the particular strain of the haemolytic streptococcus and the common strain found by them was Lancefield's Group 'A' of virulent matt type in 87 per cent of their cases.

To prove that a specific type is responsible as the causative organism, the organisms are not only to be isolated and typed but the measurement of the variation in the level of the specific antibodies has to be made during all the phases of the disease. Various antibodies are produced by the streptococci of Lancefield's Group 'A'. One of the toxins liberated by streptococci, namely, streptolysin is responsible for the production of 'antistreptolysin' in the human blood. Extensive studies have been made by Coburn[3] regarding the serological events immediately following haemolytic streptococcus pharyngitis till the establishment of rheumatic changes in the heart. The antistreptolysin is specific for haemolytic streptococcus, and is probably also Group specific (Todd[1]). Most accurate quantitative estimation of this can be made in the human serum. Detailed description of the technique for the preparation of the broth and accurate methods of titration of the antistreptolysin in human blood has been described by Coburn and Pauli[4] and Todd.[5] Todd's procedure for measurement of antistreptolysin is simple and precise. The modified expression was adopted by Todd[6] as antihaemolysin and the titre level was expressed in units.

[1] Todd, E. W.—*J. Exper. Med.*, **39** : 299, 1934.
[2] Coburn, A. F. and Pauli, R. H.—*J. Exper. Med.*, **52** : 130, 1935.
[3] Coburn, A. F.—*Lancet*, **2** : 1025, 1936.
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The natural level of antihaemolysin in human serum is approximately within 50 units (Coburn and pauli[7]). The rise in the antihaemolysin titre level is accepted as an evidence of recent infection with haemolytic streptococcus (Longcope[8]).

The recent advances on the cause of the rheumatic heart disease involve its possible aetiology—the haemolytic streptococcus. It is generally accepted that the attacks of pharyngitis due to haemolytic streptococcus commonly precede an attack of rheumatic heart disease. This relation between upper respiratory tract infection by haemolytic streptococcus and subsequent development of rheumatic heart disease was first pointed out by Coburn.[3] While discussing the aetiology of rheumatic heart disease Hadfield and Garrod[9] have postulated that the responsibility of causing the original infection lies with the streptococci. Harris and Harris[10] have made extensive investigations on the aetiology and have mentioned that haemolytic streptococcus is the causative organism of rheumatic heart disease. A substantial contribution to this problem has been made by Murphy and Swift[11] who observed histologic lesions of striking similarity to those found in rheumatic fever in cardiac tissues of rabbits which had been repeatedly infected with haemolytic streptococci. Along with the infection, specific antibodies are produced, of which antistreptolysin titre (Coburn and Pauli[7]) can be measured. This titre not only rises steadily to a high level but persists for a long time in rheumatic subjects, even after the acute infection has subsided. It is possible, therefore, to use this as an indirect method of measuring the rheumatic activity in a given subject.

Antihaemolysin titre in children below three years, is low. Moreover the titre does not rise following a haemolytic streptococcus infection. Perhaps this is due to immaturity of the immune mechanism and thus a low antibody response. Rheumatic fever is also rare at this age. In a study by McCarty[12] of 46 consecutive cases of early but established rheumatic heart disease 2 cases under five years showed only a maximum titre of 25 units per c.c.

Rheumatic heart disease has three well recognised clinical phases. The first phase is the infec-

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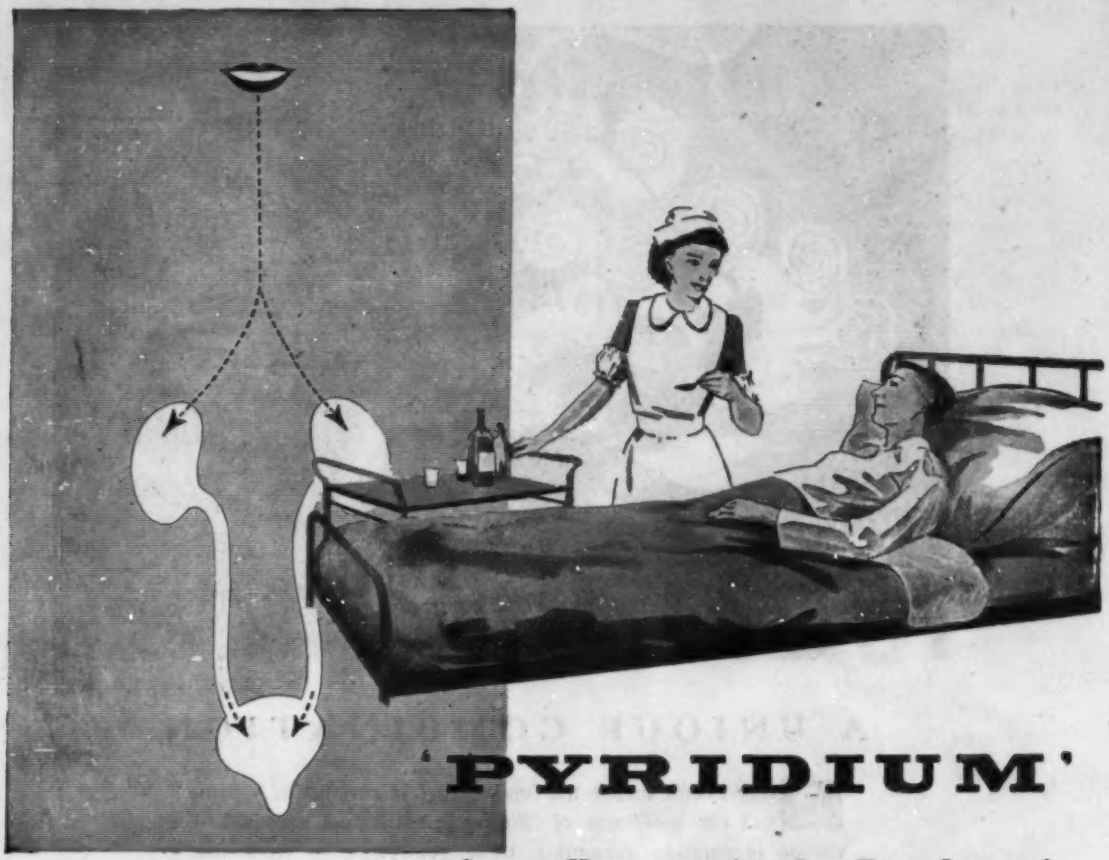

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tion of the upper respiratory tract by haemolytic streptococcus. This phase usually lasts for a few days. Haemolytic streptococcus may be isolated from the throat during this phase. The second phase immediately follows the first one and is usually characterised by the absence of any clinical feature. Its duration varies from a few days to perhaps six weeks. The majority of patients recover completely. In a small number of cases rheumatic heart disease develops after a period of convalescence. This period is probably the crucial period for the development of rheumatic heart disease with all the clinical manifestations. The appearance of the rheumatic heart disease is accompanied by the rise of the antihaemolysin titre. The time at which the serum is obtained for testing is therefore of considerable importance. In rheumatic subjects the antibody response is delayed. In non-rheumatic subjects the antibody response is rapid and the maximum rise of the titre immediately follows the upper respiratory tract infection. In rheumatic subjects however there is a very slow but a steady rise in the level of the titre. The rise in the titre level persists as long as a period of six months even after the acuteness of the disease has subsided. The rise persists even when arthritis and carditis have developed (Coburn and Pauli[7]). In the absence of antihaemolysin response there is hardly any rheumatic heart disease. In a recent symposium on rheumatic heart disease Bland and Jones[13] have well shown the striking association of streptococcal sore throat as a precipitating event followed by a latent interval and the development of rheumatic heart disease.

The determination of antihaemolysin level in blood is a currently used laboratory diagnostic procedure. It is useful in diagnosis of recent streptococcal infection of specific type and determining activity of rheumatic heart disease. It is an important supplement to clinical data. The usefulness of antihaemolysin determination in differential diagnosis of rheumatic heart diseases, has been well illustrated by McCarty.[13]

The recent trends and data in the investigations of rheumatic heart disease reviewed in this issue[14] present a picture of the complexities of this problem.

Natural antihaemolysin level in the general population has been estimated in countries where rheumatic heart disease is a major problem. This antihaemolysin titre level is not same for every country. Data collected and reviewed by Harris[15] showed that climatic and epidemiologic factors caused a wide variation in the range of titres found in normals, post-streptococcal and active rheumatic group. In India such investigation should be undertaken in view of the fact that rheumatic heart disease is gradually coming to the fore.

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GOVERNMENT AND THE I.M.A.

Our country has been freed from foreign domination but in policy and action, the present government has been still following the old bureaucratic methods. With the advent of freedom we expected a reorientation of its policy but the entrenched red-tapism still persists and even flourishes. When the Employees' State Insurance Scheme was formulated, it was thought that the government would take into account the considered opinion of the representatives of the I.M.A. on the E.S.I. Committee and its Medical Benefit Council. But it happened otherwise, with the result that the initial scheme was found unworkable. Later when protests were raised from all quarters, particularly from the members of the medical profession, regarding the unworkability of the E.S.I. scheme, good sense prevailed, and the government, the E.S.I. Corporation and the I.M.A. met and gave the scheme a workable shape.

Similarly in the first Five Year Plan the medical and health programmes, due to inexperienced administration, failed to fulfil its obligations. The I.M.A. has been repeatedly offering its hand of co-operation, but for reasons not known to us—perhaps due to tendencies inherited from the old régime—the government tried to carry on the programme depending on the staff of its own.

Many such cases of government's failure to tackle efficiently the health problems and health legislation of the country can be cited. But we do not want to make prominent the slips and failures of the government. Our object is that the government should co-operate with the Indian Medical Association in all matters related to health. The solution of health problems is a knotty affair. It requires considerable depth of thinking and a background of experience. The meagre staff of the government may not be competent to deal with matters satisfactorily.

The Second Five Year Plan is going to be formulated shortly. We hope, the government learning from past experience will not commit the same errors once more. The Indian Medical Association's co-operation can be had for the asking. As the president of our Association said: "It is in the interest of our people that there should be a free exchange of ideas and experiences and a mobilisation of all avenues of co-operation before expensive schemes and legal acts are formulated."

CURRENT MEDICAL LITERATURE

Heart in Acute Glomerulonephritis

MURPHY AND MURPHY (*Ann. Int. Med.*, **41** : 510, 1954) from an analysis of the observations on the cardiac changes in 88 cases of acute glomerulonephritis point out that if any one or combination of the following occurred, cardiac involvement was believed to be present : (*a*) the presence of clinical heart failure; (*b*) cardiac changes on x-ray examination; and (*c*) electrocardiographic abnormalities. Cardiac involvement was present in 41 cases (46·6 per cent).

A diagnosis of cardiac failure was established in 22 of the 88 cases. Cardiac failure was diagnosed more commonly in patients over 21 years of age, occurring in 10 of the 22 cases (45·5 per cent). The low incidence of heart failure in this series may have been due to several reasons : ignorance of the frequency of heart failure in acute nephritis; oedema of acute nephritis possibly obscuring distention of the neck veins shrouding one of the chief evidences of heart failure; hesitancy to make a diagnosis of heart failure in the absence of murmurs other than a systolic murmur at the apex; and an overlooked diagnosis in children, unless rheumatic fever is present.

There was a close association between severe hypertension and cardiac failure. Cardiac failure was more frequent in patients with moderate or severe hypertension. However, the hypertension itself cannot be considered the sole cause of heart failure in most cases.

Teleroentgenograms were available in 29 of the 88 cases. Twelve were normal, 17 showed cardiac enlargement. In 8 patients, serial measurements of the cardiac area were made with demonstration of the changes in size of the heart.

Electrocardiograms were studied in 47 of the 88 cases. Twenty-six were normal, one was borderline and 20 were abnormal. The abnormalities most frequently noted were in the T wave changes in Lead I, which were either of low voltage or inverted. Electrocardiographic changes did not keep pace with clinical improvement, returning to normal in from 14 to 21 days.

While cardiac failure occurred in one-fourth of the 88 cases, it occurred in nine of 16 patients who had convulsions. Electrocardiograms were all abnormal in patients with convulsions.

Painless Myocardial Infarction

ROSEMAN (*Ann Int. Med.*, **41** :1, 1954) in presenting a review of the literature and an analysis of 200 cases of painless myocardial infarction (proved by necropsy or serial electrocardiograms) observes :

There were 10 (4·5 per cent) patients with painless infarcts. Of these, only five (2·3 per cent) had reliable histories. In this series, discomfort was considered as pain.

The most common symptom in painless myocardial infarction is dyspnoea.

The various possible mechanisms for the absence of pain are reviewed.

It is concluded that painless myocardial infarction does occur. However, contrary to the earlier studies on the subject, it is felt that the incidence is extremely low.

Red Half-Moons in Cardiac Failure

TERRY (*Lancet*, **2** : 842, 1954) writes that the half-moons of the nails, normally ground-glass in appearance, may become suffused or reddened. Such red half-moons have been observed in 23 patients, of whom 14 were suffering from cardiac failure.

Study of excised nails suggests that the normal half-moon results from the formation of a light-reflecting surface between the nail and the nail-bed, which are less firmly adherent in the half-moon area than elsewhere. Red half-moons presumably result from abnormal adhesion of the nail-bed to the nail.

Red half-moons are apparently rare in healthy persons, and their detection may therefore be of some importance.

E. C. G. Changes Simulating Recent Myocardial Infarction

SEGAL (*Connecticut M. J.*, **18** : 493, 1954, Ref. *J. A. M. A.*, **156** : 198, 1954) writes that there are puzzling cases in which the symptoms appear to be those of recent myocardial infarction and the electrocardiographic findings are indicative of such disease, but which at autopsy reveal patent coronary vessels and no evidence of recent myocardial infarction. Because of recent experience with two cases, Segal reviewed the literature and found that others had had similar experiences. The first of his patients, a man aged 65, experienced severe pain in the upper abdominal region. His serum amylase was over 1,100 units and he had board-like rigidity in the upper part of his abdomen. The serial electrocardiograms revealed abnormal Q waves, S T elevations and depressions with T wave inversions consistent with a diagnosis of recent myocardial infarction. Autopsy showed that the Q waves were due to an old myocardial infarction and the S T and T wave changes were due to a circumscribed area of acute fibrinous pericarditis. Death was due to acute haemorrhagic pancreatitis. The second patient, aged 80, was at first thought to have acute appendicitis. His appendix was removed. Some days later pain in the right upper quadrant developed that suggested acute cholecystitis. He was operated on for this, and gall stones were found. During the acute distress in the upper part of the abdomen there existed electrocardiographic changes consistent with a diagnosis of recent myocardial infarction. He later died because of a bleeding duodenal ulcer. Autopsy revealed no abnormal cardiac findings. These two cases demonstrate that in acute diseases of the upper abdominal region the electrocardiogram may show changes that simulate recent myocardial infarction.

Vascular Disease in Diabetes Mellitus

MATHEWS (*Lancet*, **2** : 573, 1954) from an analysis of the observations of 545 diabetic patients of all ages and 574 non-diabetic patients over the age of 50 examined for vascular disease writes :

Vascular degeneration was found in 53 per cent of the diabetic patients, of whom 21 per cent had retinopathy and 12 per cent had albuminuria.

The incidence of vascular disease increased with age, and over the age of 50 years was higher in the diabetic than in the non-diabetic patients. The incidence of retinopathy and albuminuria, considered separately, did not show such a progressive increase with age.

Vascular disease was commoner among those who required insulin, and increased with the duration of the diabetes. Of patients who had had diabetes for less than ten years, only 9 per cent had retinopathy and 5 per cent albuminuria. Of those who had had diabetes for ten years or more, 46 per cent had retinopathy and 26 per cent albuminuria.

The incidence of vascular disease was much higher with "poor" than with "fair" control of the diabetes. Of 308 patients with "fair" control 11 per cent were found to have retinopathy and 6 per cent albuminuria, but of 237 patients with "poor" control 38 per cent were found to have retinopathy and 19 per cent albuminuria.

Uraemic Pericarditis in Acute and Chronic Renal Failure

WACKER AND MERRILL (*J. A. M. A.*, **156**: 765, 1955) write that percarditis occurs in about 18 per cent of cases of acute renal failure; that the appearance of a pericardial friction rub in acute renal failure does not have the same grave prognostic significance as it does in chronic renal failure; and that pericarditis occurs in about half of the patients dying of chronic renal failure. In keeping with the findings of earlier experimental studies to elicit the pathways and structures involved in the production of pericardial pain, the authors' clinical observations suggested that precordial pain of a pleuritic type occurs in many patients with uraemic pericarditis and pain referred to the left shoulder occurs in about half of the patients who have painful pericarditis.

'Diamox' on Oedema in Congestive Heart Failure

HAYNES AND KHAN (*Med. J. Australia*, **2**: 8, 1954) write that five in-patients suffering from congestive cardiac failure were given the drug orally and observed over a period of two months. "Diamox" (2-acetylamine-1:3-4-thiadiazole-5-sulphonamide) is a member of the sulphonamide group which has a marked inhibitory effect on the carbonic anhydrase system.

In the renal tubules carbonic anhydrase catalyzes the hydration of carbon dioxide to carbonic acid. From the carbonic acid so formed, hydrogen ions are available which are exchanged for sodium ions of the tubular fluid. The sodium ions are returned to the venous blood as sodium bicarbonate, and the hydrogen ions are excreted in the urine with ammonia and as titrable acid. If the carbonic anhydrase is inhibited, the hydration of carbon dioxide is retarded, less hydrogen ion is available to replace the sodium ion in the tubular fluid, and so more sodium ion remains in the tubules and is excreted in the urine. As potassium ion competes in the tubules with sodium ion and hydrogen ion, the use of 'Diamox' leads to increase in potassium output also. At the same time reduction in blood bicarbonate content and increase in blood acidity occur, with a tendency to general acidosis. Therefore further investigation is necessary to ascertain if the drug can be given in clinical practice without producing serious hypokalaemia and acidosis.

The authors made an attempt to evaluate how effective a diuretic it was compared with the mercurial diuretics, and if it could be used in clinical practice without undue risk. As the obtaining of sufficient number of cases for an adequate statistical evaluation was not practicable, no attempt is made to present this work as a statistical study. The conclusions arrived at are essentially clinical impressions of the reactions of five patients, compared with the clinical experience with many similar patients treated during the past ten years with bed rest, digitalis and mercurial diuretics.

All patients were treated with complete bed rest, a diet of low salt content (to two grammes of sodium daily) and digitalis. Mercurial or other diuretics were not given.

They were given "Diamox" in 0·25 gramme tablets by mouth twice daily, morning and evening, and tablets of digoxin, 0·25 milligramme three times daily. Their clinical state, fluid balance and weight were assessed each day, and their blood electrolytes were estimated periodically.

In each case diuresis occurred within forty-eight hours of taking 'Diamox' by mouth.

The impression gained was that "Diamox" was just as effective as the mercurial diuretics in controlling oedema, perhaps more effective. There was no gross disturbance of the blood electrolytes. Values for serum chlorides, serum sodium and serum potassium were always within normal limits. The carbon dioxide combining power (alkali reserve) was hardly affected.

From this study of 'Diamox' in five cases of congestive cardiac failure the impressions were gained (i) that 'Diamox' taken orally is a powerful diuretic, (ii) that it is reasonably free of toxicity and can be taken continuously for five months, and (iii) that it is effective when given by the oral route.

How Safe is Cation Exchange Resin Therapy

SMITH AND OTHERS (*Ann. Int. Med.*, **40**: 1109, 1954) in the following lines give the summary of their observations:

In this study, the authors undertook to determine if cation exchange resins could be given safely by the physician in private practice to non-hospitalized patients without his maintaining elaborate laboratory controls on the patients for signs of electrolyte imbalance. To do this, one of the authors served as a "neutral" observer of the laboratory data on the patients taking resins, while the rest of the group, without knowing the results of the laboratory tests attended these patients as "practitioners".

The authors treated 50 patients with a cation exchange resin, 15 g. three times daily for 12 weeks. In only three of them did a complication (hypokalaemia) develop. No evidence of hyponatraemia or acidosis developed; no significant change occurred in blood count, sedimentation rate and haematocrit determinations. From

experience thus far with this cation exchange resin the authors feel :

1. It is a therapeutic agent that can be administered safely to the ambulatory patient without elaborate laboratory controls, provided the patient is under periodic clinical observation.

2. It is definitely of value in the control of oedema.

3. It greatly reduces the need for adjuvant mercurial therapy.

4. It is generally well tolerated by the patients. Although patients may at first find the resin unpalatable, only five patients discontinued the regimen.

5. It is a useful adjuvant in managing oedematous hypertensives. Twenty of 33 hypertensives with moderate to slight oedema showed a significant decrease in blood pressure while on cation resin therapy.

6. Though hypokalaemia may develop, its onset can be recognized as quickly through clinical symptoms as by laboratory methods; hypokalaemia is readily controlled by administering potassium salts.

Isoniazid in Rat Leprosy

CRUICKSHANK (*Lancet*, **2** : 528, 1954) writes :

Preliminary results indicated that isoniazid had a beneficial effect on the course of experimental infection of rats with *M. leprae murium*, but prolonged observation showed that, with the dosage given, permanent cure was not obtained.

The average survival-time of a group of treated rats was 70·7 weeks, as compared with 34·6 weeks for an untreated group; but all the animals ultimately died of rat leprosy.

These observations support the published clinical work suggesting that isoniazid should not be used alone in the treatment of human leprosy.

Roentgen Rays on Lepromatous Leprosy

LUTTERBECK AND OTHERS (*Radiology*, **63** : 1, 1954) report that twenty-three lepromatous lesions of 6 patients were treated with single doses of superficial contact roentgen radiation, ranging from 1,000 to 6,000 r in air, and were observed for two years. Flattening of all but 2 of the treated lesions was noted.

Histologic studies failed to reveal evidence of radiation damage.

Repeated skin scrapings of irradiated areas failed to show any decrease in number or change in morphology of *M. leprae*.

Coarctation of the Aorta with Regression of Rib Notching Following Surgery

JONES AND STEINBACH (*Radiology*, **63** : 248, 1954) write that the notching of the inferior aspect of the ribs as a result of pressure from the tortuous vessels of the collateral circulation in coarctation of the aorta is one of the best known diagnostic signs in medicine. Since the advent of improved surgical technics, the operation for correction of the coarctation has become increasingly common. Consequently, opportunity is now available to follow this and other diagnostic signs in the postoperative stages. A case is presented here in which the coarctated segment was resected and x-ray examination one year later showed improvement in both the sharp angular and smooth broad types of rib erosion.

Neurological Complications of Spinal Anaesthesia

SADOVE AND LEVIN (*Illinois M. J.*, **105** : 109, 1954) from a four year study of 10,166 consecutive spinal anaesthesias done at veteran's hospital during the years 1948 to 1951 revealed 18 cases of neurological complications that had some possible connection with spinal anaesthesia. Five cases, which are reported in detail, represent conditions frequently blamed as sequelae of spinal anaesthesia. When they were carefully analyzed, it was found that they either existed prior to anaesthesia and were not aggravated thereby or were completely unrelated to anaesthesia. The point is made that it is often an error to give such patients spinal anaesthesia; a thorough neurological examination must be made before the type of anaesthesia is decided on. The other 13 complications fell into five general categories including 4 cerebrovascular accidents, 3 cases of cardiac arrest, 3 persistent headaches lasting one week or more, 2 cases of chronic backache, and one benign aseptic meningitis. These findings represent the experience of a group of average training in a well-conducted hospital using careful techniques. No attempt is made to draw any conclusions from these data. It is felt, however, that the neurological sequelae of spinal anaesthesia are not of sufficient magnitude to warrant the indictments of this anaesthetic techniqne that have been made by those who are opposed to its use, provided results similar to the ones reported here are consistently obtained. The authors' experience has been that the morbidity and mortality of spinal anaesthesia compares favourably with those of other anaesthetic techniques.

Deaths During Anaesthesia

BEECHER AND TODD (*Ann. Surg.*, **140** : 2, 1954) have made a very detailed and extensive study if deaths during anaesthesia in the U.S.A. They investigated all deaths in the surgical service of ten university hospitals, over a five-year period from the start of 1948 to the end of 1952. At each hospital a surgeon and an anaesthetist examined the particulars of each death, assigned it to the one of five categories (of which 'anaesthesia' was one), and reported their findings, with details of the case, to Beecher and Todd. The other categories were 'the patient's disease', 'errors of diagnosis', 'errors in surgical judgment', and 'errors in surgical technique'. Beecher and Todd have arranged the information statistically and interpreted the results.

Covering nearly 600,000 anaesthetics, they find an anaesthesia death-rate of 1 in 1560. This figure represents deaths wholly due to anaesthesia (amounting to 1 in 2680) and those in which anaesthesia was considered to play a primary part. The principal criticism of these figures concerns the criteria for assigning a death to any of the five categories. This is a difficult task when so many variables are present, and must surely leave room for disagreement—yet no cases are recorded as unassessable. Even so, the figures are valuable as a guide to the mortality of anaesthesia.

In their analysis Beecher and Todd note, among other things, that when a muscle relaxant is used the mortality rate increases nearly sixfold: the death-rate was 1 in 2100 when muscle relaxants were not used and 1 in 370 when muscle relaxants were used. These are alarming figures, but they may be misleading since the design of the investigation, as a means of discovering the actual causes of anaesthesia deaths, will not bear scrutiny. Beecher and Todd remark that the increased danger from muscle relaxants is possibly due to induced circulatory collapse despite the use of adequate artificial respiration. This is contrary to generally accepted clinical and pharmacological opinion, and, with the figures quoted, may mislead many people unacquainted with statistical methods. We can see no evidence from this survey to justify putting blame so squarely on the muscle relaxants.

A statistical inquiry sometimes has unexpected and disturbing results, and the implications of this study have been well illustrated by Beecher and Todd's comparison with poliomyelitis in the United States. They contrast the average poliomyelitis death-rate of 1·38 per 100,000 of the population with the anaesthesia death-rate of 3·29 per 100,000. That anaesthesia causes nearly two and a half times as many deaths each year as poliomyelitis is a striking fact.

Though the conclusions in this report are unlikely to be widely accepted in this country, no one can question the value of making analyses of this kind; the collection of data on the Beecher and Todd scale is one way of getting a clearer view of the dangers of anaesthesia.—*Lancet, Ann.*, **2**: 569, 1954.

Similarity of Symptomatology of Premenstrual Syndrome and Toxaemia of Pregnancy and their Response to Progesterone

DALTON (*Brit. M. J.*, **2**: 1071, 1954) gives in the following lines the summary of her observations:

An investigation into the incidence of premenstrual syndrome in 952 women showed the high incidence of 86 per cent among those who had suffered from toxaemia of pregnancy, compared with 26 per cent in controls.

A stage of minor symptoms preceding the onset of toxaemic signs is reported (these include lassitude, hypersomnia, depression, nausea, irritability, headache, vertigo, visual aura and ulcerative stomatitis), and these same symptoms tend to occur in the premenstruum.

Observations on women suffering from premenstrual syndrome showed presence of oedema, hypertension, and albuminuria in the premenstruum and spontaneous disappearance of these symptoms with menstruation.

Both premenstrual syndrome and toxaemia of pregnancy appear to have three stages of development—a stage of symptoms, followed by signs (oedema, hypertension, and albuminuria), and culminating in fits, either epileptic or eclamptic.

Following the successful use of progesterone in premenstrual syndrome, a scheme of treatment for toxaemia is suggested, based on the recognition of the early symptomatic stage. The successful treatment with progesterone of 10 cases of moderate severity and one case of severe toxaemia are reported.

Treatment of Acute Toxaemias of Pregnancy with Hypotensive Drugs

KISTNER (*J. Obstet. & Gynaec. Brit. Emp.*, **61**: 403, 1954) gives in the following lines the summary of his observation on the treatment of acute toxaemia of pregnancy with hypotensive drugs:

Thirty-seven patients with pre-eclampsia, 2 eclamptic patients, 7 patients with essential hypertension and superimposed pre-eclampsia, and 2 patients with essential hypertension alone were treated with one or more hypotensive drug. No sedation was given.

Veratrone, Verenteral and Apresoline were utilized separately and in conjunction with each other. Tetraethylammonium chloride was employed for determination of the type of hypertension present.

Veratrone in acute toxaemia produced a constant hypotension, bradycardia and was usually associated with nausea and vomiting. Temporary diminution in urinary output was noted during the period of maximum hypotension.

Verenteral produced similar results but was associated in 4 cases with ventricular extrasystoles.

Apresoline, in acute toxaemia, produced a marked hypotension and tachycardia. Headaches occurred in 32 per cent. Urinary output was not suppressed. Subjective and objective clinical improvement occurred routinely following administration.

The hypotensive drugs, used without sedation, offer a physiological mechanism for the release of the vasospasm associated with the acute toxaemias.

While these drugs are not as yet recommended as complete treatment for the acute toxaemias of pregnancy, they offer definite promise and are worthy of extensive pharmacological and clinical investigation.

Causes and Prevention of Stillbirths and First Week Deaths

WALKER AND THOMSON (*J. Obstet. & Gynaec. Brit. Emp.*, **16**: 433, 1954) give in the following lines the summary of their observations on the causes and prevention of still-births and first week deaths:

Autopsy fails to reveal the cause of stillbirth and first week death in a large proportion of cases. In any event it shows how but not necessarily why a baby dies. It was considered that a classification of causes, based mainly on the clinical circumstances leading to death, would be more helpful than one based mainly on pathological findings.

A classification on such principles was devised, and details of the method are given.

Application of the classification to 1,008 obstetric deaths (stillbirths plus first week deaths) occurring in 26,116 booked Aberdeen Maternity Hospital cases showed that about one-third of these deaths were 'clinically unexplained', in the sense that pregnancy and labour were normal. These unexplained cases were divided into "premature, cause unknown" and "mature, cause unknown" cases, on the basis of birth weight. In the remaining cases, deaths due to birth trauma, pregnancy toxaemia, ante-partum haemorrhage, foetal deformity, maternal disease and "other causes" were differentiated.

The influence of age and parity and length of gestation on the different causes of death has been studied. The incidence of deaths in the "trauma" and "mature, cause unknown" groups rises fairly steadily with maternal age, especially in primiparae. Death rates from most causes except 'deformity' and 'ante-partum haemorrhage' are high in primiparae aged 30 or over. Death rates in the 'premature, cause unknown', "toxaemia" and "deformity" groups tend to be high in the youngest age-groups, and in the case of "premature, cause unknown" are particularly high in young multiparae. The death rate in the "mature, cause unknown" and "trauma" groups rises when pregnancy goes past term, a phenomenon which appears to be associated with defective foetal oxygenation and a relatively high incidence of difficult labour in cases of postmaturity.

It is suggested that the ageing process, especially in primiparae, is associated with a decline of reproductive efficiency, and this causes a tendency for the obstetric death rate to rise with age. The 'natural' rise with age is, however, obscured by two important influences. First, many deaths from trauma are nowadays avoided by the use of caesarean section, especially in primiparae over 25 years of age. Second, in the groups of primiparae aged under 20 and multiparae under 25 the advantages of youth in procuring a very low obstetric death rate appear to be outweighed by the ill-effects of poor growth and poor general health.

The application of a very high standard of midwifery to a community helps to produce and maintain a low obstetric death rate, especially by reducing deaths from trauma. The lowest possible obstetric death rate cannot be achieved by good obstetric care alone. For this, a higher level of health among mothers and reproduction at more favourable ages would be required.

The value of epidemiological research in indicating the nature of deaths which are clinically unexplained is emphasized.

Snuffles in the Newborn

APLEY AND OTHERS (*Lancet*, **2**: 1048, 1954) in reporting on the frequency, aetiology and natural history of snuffles in the newborn observe:

99 babies with snuffles were first seen in the neonatal period and were observed until the disorder cleared up.

The average incidence of snuffles in four maternity units was 2·6 per cent. The incidence did not vary significantly with birth-weight or season, but it was slightly greater in girls than in boys.

In most cases snuffles started between the second and twelfth days of life and lasted up to a week. If it was still present when the baby was discharged from hospital it might persist for several months or, occasionally, longer.

Usually the discharge was serous; but in some babies it was purulent from the onset, or became so later, and in a few it was sanguineous.

Among the commoner complications were difficulties in feeding and upper-respiratory or pulmonary infections.

There is probably a basic incidence of snuffles, for which no cause has been demonstrated; but the incidence rises if infants are exposed to infection, such as coryza. In no case of the series under review was snuffles due to syphilis.

Oral Penicillin in Infancy

LAURANCE AND ALDER (*Brit. M. J.*, **2**: 1392, 1954) in giving a comparison between oral benzathine and oral sodium penicillin observe:

For the newborn, sodium penicillin is as effective as benzathine penicillin. The reliability of absorption is about the same for each. Benzathine penicillin is more palatable than sodium penicillin and keeps well at room temperature; it does not, however, give peak levels in the blood quite as quickly or possibly as high as sodium penicillin. There is no evidence that it maintains an adequate serum level for an appreciably longer time than sodium penicillin. The cost of benzathine penicillin is greater than that of sodium penicillin.

Early Clinical Sign of Infectious Mononucleosis

HOLZEL (*Lancet*, **2**: 1054, 1954) describes a petechial eruption on the soft palate as an early manifestation of infectious mononucleosis. The purpuric spots vary in number and slightly in size. They are localised at the junction of soft and hard palate in a crescent-like arrangement, appear between the third and the seventh days of the illness, and fade after three to four further days.

CURRENT TOPIC

THIRD ANNUAL MEETING OF CENTRAL HEALTH COUNCIL

The following is a summary of the inaugural address by the Union Health Minister, Rajkumari Amrit Kaur:

HEALTH PROGRAMME IN COMMUNITY PROJECTS

Though an appreciable advance has been made in this direction in some States, it has to be admitted that the progress on the whole has been extremely slow. The latest figures supplied by the Community Projects Administration, however, show that on an all-India basis only 38 per cent of the financial targets have been achieved so far in respect of the Community Project Blocks allotted in October 1952 and only 20 per cent in respect of Blocks allotted in October 1953. This clearly shows that the health programme is not being held up in its execution on account of insufficient funds alone and there must be other factors which are responsible for such slow progress.

I am fully conscious of the difficulties that the State Governments have to face in implementing the health programme in the Community Project Blocks. The lack of requisite trained staff is one very important factor and to overcome this the Government of India have already offered financial assistance to State Governments to augment the training programmes for lady health visitors, auxiliary nurse-midwives and midwives.

There are also other difficulties. The health programme in a Community Project is, to a very large extent, based on the primary health centres which provide the focus from which health activities radiate. The number of such primary health centres that have been established so far is, however, not very great. Some States have not been able to set up any centre at all; others are developing such centres by making certain additions and alterations to their existing dispensaries and only a few States have established new primary health centres. While many States have integrated their preventive and curative health services at least at the periphery if not at the centre, there are many others where there is no integration at all. In such cases the health programme in a Community Project Area can best be developed by entrusting it to the Public Health Department since much greater emphasis has to be placed on the preventive aspect of disease including improvements in environmental sanitation. The ideal, of course, would be a complete co-ordination in both the preventive and curative fields.

Rural Health

Many States, I understand, are experiencing difficulty in recruiting medical officers for the rural health centres. There are three main reasons for this. The remuneration is inadequate, there is dearth of suitable residential accommodation and the existing dispensaries and hospitals in the rural areas are not properly equipped.

It has been observed that while good progress has been made in the provision of a safe water supply by constructing sanitary wells, the construction of sanitary latrines is not receiving the emphasis that it deserves. There is need to further popularise the use of soakage pits, smokeless 'chullas' and ventilators and encourage the pavement of village lanes and construction of drains and manure pits. There is also need to improve the method of collection of health statistics.

I will now pass on to the B.C.G. Vaccination Programme. As members are no doubt aware, this programme was started in India on a small scale in 1948 and ultimately extended as a mass-scale campaign in 1951. The progress of this programme has been quite satisfactory and practically the whole country is now being covered.

In the resolution passed by the Council at its meeting held in Hyderabad it was recommended that the State Governments should take necessary steps to improve the conditions of service of the team leaders and also to intensify their publicity campaigns. Though some States have been making constant efforts to improve the working conditions of the B.C.G. personnel, others, I regret to say, have not been able to keep the B.C.G. personnel contented and enthusiastic about their work.

National Malaria Control Programme

I shall now take up the National Malaria Control Programme. The progress in this field, I am glad to say, has been satisfactory. Eighty-five out of the 90 units sanctioned during 1953-54 have been formed and the remaining 5 allotted to Assam are in the process of formation. Supplies in respect of D.D.T., spraying equipment, trucks, jeeps and microscopes for 75 units have been made in full. Supplies in respect of the remaining 15 units have still to be completed.

In March 1954 an agreement was signed between the Government of India and the U.S. Technical Co-operation Mission regarding the formation of 35 more units during 1954-55 to bring the total to 125 as originally contemplated. But since the demands received from the States for additional units could not be met completely, a further addition of 11 units has now been sanctioned bringing the total number to 136.

Active steps are also under way to make the country self-sufficient as far as possible in the matter of supplies of insecticides. A factory designed to produce 700 tons of technical D.D.T. is under construction at Delhi as a joint project by the Government of India, WHO and UNICEF. It is expected to go into production in another 2-3 months. The question of doubling its production capacity is already under active consideration. The establishment of another D.D.T. factory with a production capacity of 1400 tons is also under the active consideration of the Government of India.

In order to focus public attention on the National Malaria Control Programme and enlist public co-operation, a publicity week was organised from 7th to 12th June, 1954, throughout the country.

Fifty medical officers, 288 malaria inspectors and 13 engineers have received training in malariology at the Malaria Institute of India during the last three years. An 'Operations Guide' has been compiled and copies supplied to all the units.

During the past year, the Secretary of the Indian Council of Medical Research and a representative of the Rockefeller Foundation visited 22 medical colleges in the country in order to explain the aims and objects of the Programme and also to interview suitable candidates in their own environment. Over 60 applications for the award of Fellowships in various subjects ranging from psychiatry to anatomy have been received so far. Out of these 20 candidates have been placed for training in appropriate institutions and have started working for their postgraduate degrees and diplomas.

Important advances have been made in the field of nutrition. As a result of the work carried out under the auspices of the Council (I.C.M.R.) in Coonoor and Madras, the prevalence and social significance of protein malnutrition as a public health hazard are beginning to be realised widely. Country-wide surveys of protein malnutrition are proposed to be carried out by the I.C.M.R. during the next year in collaboration with W.H.O. The possibility of supplementing the meagre amount of protein in the average Indian diet with relatively cheap proteins of vegetable origin is going to be explored.

The first Five-Year Plan is nearing completion; the Second Five-Year Plan is being given serious thought.

It was felt that the present was the most opportune moment for planning and organising medical research directed towards the solution of our outstanding health problems. Accordingly, a Symposium on 'Medical Research and the Second Five-Year Plan' was organised at the time of the annual meetings of the Scientific Advisory Board and Technical Advisory Committees of the Indian Council of Medical Research in Baroda in December 1954. A number of research workers, teachers, medical and public health administrators took part in the symposium and all the viewpoints expressed by the participants were recorded and summarised by a special committee. This subject is to be discussed in detail at a special meeting of the Scientific Advisory Board to be held shortly.

Medical Education

In the field of medical education there are two significant developments, which I would like to bring to the notice of this Council in the context of the resolution passed at its first meeting at Hyderabad in 1953. With a view to determining, not only the basic standards of the minimum pre-medical qualifications, the curricula of studies, conduct of examinations, condition of internship etc., but also to evolve methods for the improvement of medical education in all its aspects, we propose to hold a conference in the course of this year. Some spadework for this conference has already been done and the preliminary ground has been covered by some prominent educationists who met in Bangalore last year at the invitation of the Rockefeller Foundation. I am sure that with the material that is available through the first World Conference on Medical Education held in London in 1953 and the data collected by the WHO, the proposed conference will be able to make valuable recommendations for the advancement of undergraduate medical education in the light of conditions in our country.

The desirability of having an All-India Health Service has been discussed by the Council during its two previous meetings and it was also discussed at the Third Health Ministers Conference in August-September, 1950. The constitution of such a service unfortunately did not find favour with the majority of the Health Ministers but I still feel and earnestly hope that one day such a service, which indeed is one of my cherished dreams, will come into existence. We will be discussing a proposal regarding the creation of an all-India cadre for and upgrading the scales of pay of the teaching staff in Medical Colleges all over the country. This will also give an opportunity to re-open this question of forming a more broad-based all-India Health Service. At the Centre we have now finalised a scheme for a Central Health Service embodying all Class I and II posts in the field of both curative and preventive medicine, administration and research under the Government of India and Part C States with their concurrence. With a view to enabling the Government to loan such officers to other States and statutory bodies, e.g., Corporations, who may wish to employ such officers, it has been proposed to include an adequate deputation quota.

Health Information

Before concluding I would like to take this opportunity of mentioning one or two points on which we at the Centre need the active co-operation of State Governments. There is a persistent demand from various parties, such as planners, research workers, Members of the Lok and Rajya Sabhas and administrators for statistical information in connection with the different aspects of public health and medical relief. It is essential that this information should be reliable and be readily available with the Central Government for the entire country so that it can be furnished on demand without delay. At present the Directorate General of Health Services endeavours to collect such information from the States through their Administrative Medical Officers. But in view of the rapid changes that are taking place in most States the statistical data received is not always up-to-date. It is, therefore, necessary that reasonably accurate and complete statistics should be available without undue delay.

NOTES AND NEWS

Sir Edward Mellanby Dead

Sir Edward Mellanby, who was 70, collapsed in the grounds of the National Institute for Medical Research at Mill Hill, a northern suburb on January 31, 1955. He discovered vitamin "D"—popularly known as the sunray vitamin—and thus saved countless sun-starved slum children all over the world from rickets.

Institute of Medical Physics in Calcutta

Considerable headway has been made for the setting up of an Institute of Medical Physics in Calcutta. The Town Planning and Improvement Committee of the Corporation has agreed to lease out a two-bigha plot of land for the proposed Institute, the idea for which was sponsored by the Vice-Chancellor of Calcutta University, Dr. J. C. Ghosh, and Prof. M. N. Saha.

The Central and State Governments have been approached for grants. The initial capital cost will be about Rs. 20,000,000 and the recurring annual expenditure Rs. 3,00,000.

The aims of the proposed Institute include training of personnel as biophysicists (medical physicists), for which no facilities exist at present in the country; arranging in co-operation with post-graduate medical teaching institutions in the city, practical and theoretical training on the application of theories and methods of modern physics to actual medical problems; teaching of radiological physics to medical graduates who intend to specialise as radiologists; and promotion of intensive research in different aspects of medical physics. The programme of work has been drawn up in consultation with the research plans of similar institutions in Europe and the U.S.A.

UNICEF Officials visit Penicillin Factory at Pimpri

Mr. Maurice Pate, Executive Director of the U.N.I.C.E.F., accompanied by Mr. S. M. Keeny,

CALCIUM GLUCONO-LACTOBIONATE

CALCIUM B. I., a double salt of Calcium Gluconate and Calcium Lactobionate (Calcium Galacto-Gluconate) quickly increases the ionisable Calcium in blood. Has two advantages—extreme solubility and better utilization by the tissues.

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...and not really expensive because it lasts so long...
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on Bacillary Dysentery

Emphasis has been given recently to the use of combined chemotherapy in infections and to the merit of the judicious combination of antibiotics and sulphonamides in the prevention of bacterial resistance.

In the treatment of many infections of the gastro-intestinal tract, combined therapy with streptomycin and sulphaguanidine is a distinct advance on previous forms of treatment.

Guanimycin, in which oral streptomycin sulphate is combined with sulphaguanidine, is indicated in the treatment of bacillary dysentery, gastro-enteritis, salmonella food poisoning and other mixed infections of the gastro-intestinal tract in infants, children and adults.

Guanimycin is issued as a free-flowing powder from which a smooth, palatable homogeneous suspension may be made by simple mixture with water.

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U.N.I.C.E.F. Regional Director, Asia region, Mr. T. G. Davies, U.N.I.C.E.F. chief at Delhi, Dr. N. L. MacPherson, chief of the United Nations Technical Assistance Administration of Mr. A. E. Commings, U.N.T.A.A. Project Engineer, visited the Penicillin Factory at Pimpri on January 31, 1955.

The two-crore-rupee-Penicillin Factory—the second of its kind to be assisted by the U.N.I.C.E.F., the first being at Yugoslavia—will go into production by the end of this year. It was stated that initially the factory would be able to meet a major part of India's penicillin requirements. India at present needed 20 million megas of penicillin but the requirements according to the authorities would go up by four times during the coming five years.

According to one of the conditions specified by the U.N.I.C.E.F. Penicillin worth Rs. 45 lakhs—the amount of assistance given by U.N.I.C.E.F. to the factory—should be distributed free to the needy in the country. The first phase of the distribution would be in Madhya Pradesh, Andhra and Orissa where over eight lakhs of people needed immediate attention.

The members of the party were impressed with the progress made at the factory.

The U.S. Academy of Psychosomatic Medicine

The U.S. Academy of Psychosomatic Medicine held its first Annual Meeting at the Plaza Hotel, New York City, on October 8-9, 1954. Over one hundred Fellows and guests attended the two day session, devoted to "The Psychosomatic Aspects of Surgery".

The second annual meeting will be held again at the Hotel Plaza, October 6th, 7th and 8th, 1955. The general subject decided upon is "The Psychosomatic aspects of Drug Administration". Those who wish to present papers at this meeting are invited to communicate with the programme Chairman, Dr. Ethan Allan Brown, Boston, Massachusetts, from whom applications for a Fellowship and a copy of the Constitution may also be obtained.

The third annual meeting is planned for the Edgewater Beach Hotel in Chicago, in October 1956. The programme Chairman will be Dr. William Kaufman, and the subject tentatively chosen is "The Psychosomatic Aspects of Endocrine Disorders".

CORRESPONDENCE

The Editor is not responsible for any views expressed by correspondents

Antibiotics and Chemotherapy in Pulmonary Tuberculosis

SIR,—With reference to my article entitled "Antibiotics and Chemotherapy in Pulmonary Tuberculosis" published in your Journal of Feb. 1, 1955, I should like to have it pointed out that because of editing to shorten the article, several changes were made which have resulted in erroneous conclusions in the content of the article.

I had hoped to sound a note of caution for I feel very strongly that, except for exceptional cases, the combination of streptomycin and isoniazid should never be used because I believe that one of these two drugs should be kept in reserve. Tuberculosis is known to be a chronic disease with a great tendency to relapse. I am etc.

Christian Medical College, Ludhiana, Punjab. F. C. EGGLESTON, M.D., *Thoracic Surgeon.*

Rural Areas Need More Attention

SIR,—It is a matter of considerable satisfaction that the Journal is now being published twice a month with the hope to publish it weekly. With the growing popularity of the Indian Medical Association and its Journal the day does not seem to be far off when this hope will be fulfilled. The newly introduced 'Refresher Course' has filled a gap and I hope will be appreciated by all.

I take this opportunity to point out the fact, that the membership of the Indian Medical Association does not boast of many rural practitioners. The working committee goes without a single rural member. The result is that there is no rural voice and advice. Whatever the urban member very kindly speaks about rural matter is bound to be more or less a guess or at best second-hand.

The organisers of the Association have been paying scant attention towards the countryside. The urban branch associations also do not seem to take much notice of this shortcoming. The reason is not far to seek. Poor communications and other inconveniences in approaching the village practitioners come in the way and keep them in the background.

Now that the services of the rural practitioners have begun to be justly taken notice of it, would be in the fitness of things to take some more trouble and organise the rural areas and bring this neglected section of the profession into the folds of the Association.

This will strengthen the Association by making it more representative. I am etc.

Village Panapur, P.O. Raksa, District Muzaffarpur. B. D. N. SINHA, L.M.P., CAPT. EX.I.A.M.C.

Tapeworm Treatment by Duodenal Intubations with Mepacrine

SIR,—A patient, a resident of Mysore, aged about 25 years, came to us with the history, that he was passing bits of a worm, while passing stools, for the past one year. Naked eye examination of the stools showed proglottides and microscopic examination revealed tapeworm ova.

The patient was put on a moderate diet for three days, and a cleanse with a saline purgative every morning. On the fourth morning a duodenal tube was passed the pylorus and 0·8 g. of mepacrine, suspended in 100 c.c. of water, was put in through the tube. Half an hour later, 3 oz. of mist. alba was administered. The patient was instructed to pass the stools into a bedpan. After about two hours, the worm started coming out with the

stools, bit by bit, very slowly. When half the worm (about 10 feet) was out, the worm began to retrace its steps. To prevent it from getting in entirely, the patient pressed a match stick over it and the worm snapped at that point. A high enema and another dose of purgative did not help to dislodge the worm.

The treatment was repeated 3 days later. This time the rest of the worm came out and the head was recovered.

Duodenal intubation, which is the logical method of attacking the worm with the anthelmintic directly, gives poor results with petrol-ether (9 per cent head recovery), moderate results with filixmas (29 per cent head recovery), and good results with mepacrine (75 per cent). Moreover a high concentration of mepacrine is achieved in the neighbourhood of the worm.

We feel that treatment of taeniasis by duodenal intubation, with mepacrine is certainly a very safe and a sure method of expelling the worm. We are etc.

Mysore. (DR.) K. VENKATA RAO,
(DR.) S. RAMA RAO.

REVIEWS

T. B.—Sahajbodhya O Sahajsadhya.—By Dr. Naresh Chandra Dasgupta, with a foreword by Dr. N. N. Sen, Superintendent, K. S. Ray T. B. Hospital, Jadavpur. 4½"×7", pp. 191 with 12 plates. Published by Sri Bina Dasgupta, Calcutta.

The book, written in Bengali, consists of ten well written chapters. In chapter six while discussing treatment, the author has very wisely drawn attention to the amount of hardship the patient's family members have to undergo to provide for the costly treatment of tuberculosis which is well-known as a disease of the poor. The reviewer endorses the views of the author as regards the use of medicines manufactured by local firms. They are in no way inferior to any of the foreign products.

As this book is meant primarily for the layman, it would have been better if the skiagrams were omitted. There are many typographical errors. Some of the renderings are not well suited, e.g., those for hypersentiveness and fibrous tissue. Caseation has been explained as "abscess" or "necrosis". Description of rhonchi in page 49 is wrong.

The book is easy reading and contains much information. The get up is good. The book is recommended for all public and patient's libraries.

All-India Medical Directory and Who's Who.—Edited by Dr. K. V. Mathew, L.M. & S. Published by Health Book Stall, Erviperoor, Travancore, South India. Fully revised 1955 edition. Board-bound; price Rs. 20/-.

This Directory, first published in 1949, has now been reprinted after revision. The book is divided into several sections, running up to a total of 534 pages containing various information concerning medical administration, medical education and medical relief. Attempts have been made to incorporate uptodate information, but it is perhaps inevitable in such a big compilation work that one or two items, here and there, may not supply quite the latest data in certain fields. There is a list of doctors and a separate list of dental surgeons. There are also lists of chemists and druggists as also one of manufacturers of medical and surgical goods. India is a vast country and it is an almost impossible task to compile a complete list of names and addresses in these categories. In the face of such odds, the compilation and production of such a volume is commendable. An improved quality of paper would certainly have made the book more attractive.

Medicine in Its Human Setting.—By A. R. Clark-Kennedy, M.D., F.R.C.P. Published (12th November 1954) by Messrs. Faber and Faber Ltd., 24 Russell Square, London, W.C. 1. Price 13s. 6d. net.

This is an interesting book of 276 pages containing twenty-two clinical stories meant for medical students, nurses and even of interest to practitioners. The author with his long experience, has very ably presented clinical pictures of some common ailments in the form of stories to make the subject matter appear more real and humane—as met with in the practice of medicine, rather than as abstract "disease-entities", with water-tight compartments, as it often appears to students on reading standard text books or while going through class-lectures. For example, the two stories "Early Handicap" and "Gallant Struggle" describe, in the form of connected stories, the life history of a young girl with acute rheumatism, following her through childhood, adolescence, marriage, pregnancy, sterilisation, attacks of heart-failure and finally, to death—all very readable and humane in the entire treatment of the subject. This book should be read by teachers of medicine and should find a place in the libraries made use of by medical students and nurses.

The Year Book of Obstetrics and Gynecology (1954-55 Year Book Series)—Edited by J. P. Greenhill, B.S., M.D., F.A.C.S. The Year Book Publishers Inc., 200 East Illinois Street, Chicago 11, Ill., U.S.A. Price $6.00 post paid.

The present volume has been produced along the same line as its predecessors—so ably presented by the editor Dr. Greenhill. This volume covers the abstract of articles taken from journals received between July 1953 and July 1954. Running to a total of 544 pages, this volume presents the abstracts on Obstetrics and Gynecology in two big groups, each subdivided into several convenient sections. Apart from the intrinsic value of the large number of abstracts of articles taken from a large number of journals, the value of the reading matter has been greatly enhanced by the incorporation of frequent and detailed editorial comments from an experienced editor like Dr. Greenhill. Like the previous numbers of this series in Obstetrics and Gynecology, the present volume can claim a prominent place on the bookshelf of every gynecologist as well as of every practitioner who wants to keep himself abreast of times.

SUPPLEMENT

Journal of the Indian Medical Association

VOL. 24, No. 11 CALCUTTA MARCH 1, 1955

ASSOCIATION NOTES

I. M. A. WORKING COMMITTEE

Proceedings of the 53rd Meeting of the Working Committee of the Indian Medical Association held at King George's Medical College, Lucknow, on 23rd December, 1954.

(Subject to confirmation)

Members Present :

(a) *Ex-Officio Members.*

1. Dr. S. C. Sen (New Delhi)—President (in the Chair). 2. Dr. B. V. Mulay (Sholapur)—Immediate Past President. 3. Dr. D. V. Venkappa (Madras)—The Senior Vice-President. 4. Dr. S. Samaddar (Patna)—Vice-President. 5. Dr. B. L. Kapoor (Ludhiana)—Vice-President. 6. Dr. A. P. Mittra (New Delhi)—Honorary General Secretary. 7. Dr. J. N. Bahadur (New Delhi)—Honorary Joint Secretary. 8. Dr. A. N. Roy (Calcutta)—Honorary Joint Secretary. 9. Dr. H. R. Dawar (Delhi)—Honorary Treasurer. 10. Dr. R. Sinha (Calcutta)—Honorary Secretary, Journal, I. M. A.

(b) *Representatives from State/Territorial Branches* :

11. Dr. R. S. Reddy (Nellore), 12. Dr. M. V. Krishna Reddy, Andhra State Branch, 13. Dr. P. C. Duarah (Gauhati), Assam Prov. Branch. 14. Dr. H. C. Mallick (Dhanbad), 15. Dr. A. K. Sen (Patna), 16. Dr. Damodar Prasad (Patna), Bihar State Branch. 17. Dr. J. Majumdar (Calcutta), 18. Dr. K. K. Sen Gupta (Calcutta), 19. Dr. A. K. Bose (Calcutta), 20. Dr. S. Roy Chowdhury (Calcutta), Bengal State Branch. 21. Dr. C. S. Thakar (Bombay), 22. Dr. T. K. Babur (Bombay), Bombay State Branch. 23. Dr. R. C. Goulatia (New Delhi), Delhi State Branch. 24. Dr. A. P. Shukla (Ahmedabad), 25. Dr. B. G. Mehta, 26. Dr. S. N. Mankad, Gujrat & Saurashtra State Branch. 27. Dr. B. K. Vinchure (Nagpur), Madhya Pradesh State Branch. 28. Dr. R. A. Bhagwat (Indore), Madhya Bharat State Branch. 29. Dr. B. K. Modak (Kalyan), 30. Dr. G. V. Joshi (Hubli), Maharashtra & Karnatak Prov. Branch. 31. Dr. M. Gurudas (Mysore), 32. Dr. T. A. Dorai Royan (Mysore), Mysore State Branch. 33. Dr. T. S. Balasubramanyam (Trichy), 34. Dr. A. M. Sivaraman (Madras), 35. Dr. (Lt.-Col.) T. S. Shastry (Madras), Madras State Branch. 36. Dr. Sain Das Vohra (Amritsar), 37. Dr. Ram Rakha Dhir (Jullundur), Punjab State Branch. 38. Dr. Tara Shankar Mathur (Jullundur), Rajputana State Branch. 39. Dr. S. N. Saxena (Kanpur), 40. Dr. H. N. Shivapuri (Kanpur), U. P. State Branch.

(c) *Co-opted Members* :

41. Dr. Chamanlal M. Mehta (Bombay). 42. Dr. P. C. Shori (Amritsar). 43. Dr. Ved Prakash (New Delhi). 44. Dr. M. A. Panwala (Bombay). 45. Dr. S. B. Anklesaria (Ahmedabad). 46. Dr. A. C. Ukil (Calcutta).

(d) *Invited Members* :

47. Dr. S. N. Mukherji (Banaras). 48. Dr. M. M. S. Siddhu (Lucknow). 49. Dr. S. N. Mathur (Lucknow). 50. Dr. S. K. Choudhari (Banaras).

Dr. S. C. Sen, the President, announced the names of the members co-opted and invited by him to the Working Committee.

1. *Condolence Resolution* :

The following condolence resolution was unanimously passed, all members standing and observing silence for one minute :—

"This meeting of the Working Committee of the Indian Medical Association places on record its deep sense of sorrow at the sad demise of the following members of the Association and conveys its heartfelt sympathy to the members of the bereaved families :—

1. Dr. H. N. Kamath (Cochin), 2. Dr. P. K. Verghese (Kottayam), 3. Dr. Ratilal Parikh (Ahmedabad), 4. Dr. Upendra Nath Ghosh (Suri), 5. Dr. B. P. C. Vachrajoni (Surat), 6. Dr. B. P. Dhalakia (Junagadh), 7. Dr. K. R. Kini (South Kanara Branch), 8. Dr. P. S. Kasture (Manmad), 9. Dr. S. G. Joshi (Bombay), 10. Dr. Jotirmoy Ganguli (Calcutta), 11. Dr. Kanai Pal (Baranagar, Bengal), 12. Dr. Anadi Ch. Sarkar (Jagatballavpur), 13. Dr. S. Majumdar (Asansole), 14. Lt. Premankur Dey (Calcutta), 15. Dr. Ram Nath Chopra (Jullunder), 16. Dr. S. P. Saxena (Alwar Branch).

2. *Messages of inability to attend the meeting* :

Messages of inability to attend the meeting received from the following members were read :

1. Dr. P. K. Chatterjee (Calcutta), 2. Dr. D. G. Ojha (Jodhpur), 3. Dr. S. W. Hardikar (Hyderabad), 4. Dr. G. S. Melkote (Hyderabad), 5. Dr. A. D. Mukharji (Calcutta), 6. Dr. P. R. Trivedi (Ahmedabad), 7. Dr. P. K. Guha (Calcutta).

Dr. S. N. Mukherji (Banaras) raised an objection regarding representation to the Working Committee (Rule No. 35(b). Discussion took place. Dr. H. N. Shivapuri (Lucknow), Dr. Chamanlal M. Mehta (Bombay) and Dr. R. C. Goulatia (Delhi) spoke on the point.

Dr. S. C. Sen, the President, explained and said that the rule was clear and it should be an established convention that the members took office after the Annual Session and continued till their successors were elected.

Representation to the Central Council was also discussed and it was explained by Dr. S. C. Sen that the members whose names were in the office six weeks before the meeting, could attend and in the absence of new names having been received in the Central office before the above time, the old members whose names were in the Office, would attend.

3. *Confirmation of the Proceedings of the last meeting of the Working Committee held at Bangalore on 21st and 22nd October, 1954.*

The Proceedings of the last meeting of the Working Committee, as circulated, were duly confirmed (Proposed by Dr. H. N. Shivapuri and seconded by Dr. G. V. Joshi (Hubli).

4. *Business arising out of the Proceedings of the last meeting.*

(1) *Re. Lawyer's notice on behalf of Dr. N. R. Apte (Satara).*

Dr. A. P. Mittra, the Honorary General Secretary informed the house that no reply had been received up

to date to the letter of our Legal Adviser. The matter was noted.

(2) *Spirituous Preparations Bill.*

Dr. A. P. Mittra explained the causes and difficulties of non-availability of the report and how and why it had not been possible to hold the meeting of the Sub-Committee. Dr. C. S. Thakar (Bombay) handed over typed copy of the Rules, re. Spirituous Preparation of Bombay Government.

The Sub-Committee's report was then decided to be taken up at the next meeting.

(3) *Letter No. 554 dated 14-12-54 of Dr. B. V. Mulay, regarding Coal Mines Labour Welfare Committee.*

Dr. A. P. Mittra, the Honorary General Secretary informed the house that the three State Branches concerned had been requested to send their views to the Central Office but no replies had yet been received. It was then decided that 1. Dr. J. Majumdar (Calcutta), 2. Dr. B. K. Vinchure (Nagpur) and 3. Dr. Damodar Prasad (Patna), should meet and should give their recommendations in the matter later on.

The above three members having met, made the recommendation that the Joint Fact-Finding Committee regarding Coal Mines should consist of (1) Dr. J. Majumdar (Calcutta), (2) Dr. P. N. Sinha and (3) Dr. B. K. Vinchure (Nagpur)—(with powers to co-opt). Convener —Dr. J. Majumdar.

The House then appointed the above Sub-Committee and sanctioned that travelling expenses for this Sub-Committee upto a maximum of Rs. 500/-, would be permissible. The terms of reference of this Sub-Committee were to be as under :—

1. To go into the question of medical facilities offered to the people of the coal mining areas.
2. To study the service conditions of the medical men employed in the Coal Mines areas.
3. To study the question of representation of the I. M. A. on relevant Committees—whether local, State or Central, and
4. To study other allied subjects.

(4) *Licentiates and Medical Academy of Vienna.*

Dr. A. P. Mittra explained the back-ground and his correspondence with the Director General of Health Services. The final reply was still awaited and the matter would be brought up again when something materialized.

(5) *Matters regarding Employees State Insurance Corporation.*

Dr. Chamanlal M. Mehta (Bombay) read out a letter which he had written to the Central Office detailing the position obtaining in the State of Bombay as regards the ESIC. A good deal of discussion followed in which Dr. Sain Das Vohra, Dr. J. Majumdar, Dr. A. P. Shukla and Dr. S. B. Anklesaria took part, particularly with respect to the conditions obtaining in their States.

The report of Dr. Chamanlal M. Mehta was decided to be appended as an Annexture with the Annual Report. It was also decided to write to the proper authorities concerning the difficulties as mentioned in the Report.

(6) *Ban imposed by the Madhya Pradesh Government on Medical men in State employment from joining the I. M. A. or continuing as members thereof.*

Dr. S. C. Sen, the President informed the house of his talk with the Minister of Health (Madhya Pradesh) and his efforts in approaching Dr. A. D. Mukharji (Calcutta) to write to his counterpart in Madhya Pradesh. The letter of Dr. A. D. Mukharji was read out. The House was informed that the matter was under the consideration of the Madhya Pradesh Government. It was decided that copies of the correspondence between Dr. A. D. Mukharji and Health Minister, Madhya Pradesh be sent to Dr. B. K. Vinchure (Nagpur).

(7) *Residency appointment abroad.*

Dr. A. P. Mittra told the house about the questionaire circulated to the State Branches to elicit opinion from the doctors who had returned after residency training. Discussion ensued and Dr. Chamanlal M. Mehta, Dr. R. C. Goulatia and Dr. S. N. Mathur (Lucknow) took part. Dr. S. C. Sen gave figures showing that there was an all-round increase in the number of applicants and candidates appearing for the interview and also in the number selected. Dr. S. C. Sen said that the need for official recognition of this training should be impressed upon the State Governments and Faculties of Medicine of the Universities, and State Secretaries of the I. M. A. should take active steps to achieve this end. It was decided to wait till the answers to the questionaire were received to decide any further line of action.

(8) (a) *Nomination of a Delegate of the I. M. A. to attend the British Commonwealth Medical Conference in Toronto, Canada, as Observer, from June 14th to June 24th 1955.*

Dr. A. P. Mittra, the Honorary Secretary, informed the house that 3 nominations had been received at the Central Office for the Commonwealth Medical Conference.

Dr. Chamanlal M. Mehta (Bombay) suggested that the Indian Medical Association should send the younger generation to represent it and the experience thus gained by them would be of great benefit to the Association. He then suggested that the Honorary General Secretary be sent as a Delegate.

After discussion, the matter was postponed till the afternoon session. In the afternoon the matter was again taken up.

The names of Dr. A. P. Mittra (New Delhi) and Dr. A. C. Ukil (Calcutta) were duly proposed and seconded. The name of Dr. A. C. Ukil was later withdrawn and Dr. A. P. Mittra was nominated.

It was decided that if for any reason, Dr. A. P. Mittra was unable to go, the President be empowered to nominate the Delegate.

(b) *Nomination of a Representative of the I. M. A. to attend the Australasian Medical Congress (B. M. A.) Ninth Session from 19th and 27th August, 1955.*

It was decided to write to the Australasian Medical Congress that at present the Indian Medical Association was unable to send any one, but would inform them later if it became possible to send a Representative.

(9) *Application for Research Fellowship.*

The Sub-Committee's Report recommending the name of Dr. U. N. Pathak of Amritsar for research in "Determination of Rh. State and Rh. iso-immunisation with their effects on Pregnancy in Punjabi Women" was accepted by the house and a Scholarship was awarded to the above candidates.

The President informed the house that since these Scholarships had not been awarded for several years past and since there was also money available for giving another Scholarship, the Sub-Committee was requested to suggest a second candidate as well. The members of the Sub-Committee met again and recommended the name of Dr. Gopi Raman Prasad of Patna, the subject of his research being "Malnutrition, its clinical features and value of repeated plasma infusions".

The Scholarships were to be of the value of Rs. 250/- each per month, tenable for one year in the first instance.

(10) *Discussion on D.T.M. Course.*

To be taken up at the Central Council.

(11) *Annual Report of the Central and Journal Offices for 1953-54* (Copies circulated).

I—*Central Office.*

Dr. S. Roy Chaudhury (Calcutta) suggested that the Reports of our Representatives on different organisations should be obtained and should be incorporated in the Annual Reports. This was noted.

Dr. J. Majumdar pointed out certain mistakes and it was decided to adopt the Report after the following corrections and additions : (Proposed by Dr. H. N. Shivapuri (Kanpur) and seconded by Dr. R. Sinha (Calcutta) :

Page No. 4, Item No. 15: 2nd para to be deleted and the following to be added :—

"The Bengal State Branch of the I. M. A. organized medical relief in the flood affected areas of Jalpaiguri and Cooch-Bihar in co-operation with the local Branches from the very beginning of the calamity in July 1954. The Medical relief work for the flood stricken people in these areas has been continuing since then, under the auspices of the Indian Medical Association, Bengal State Branch."

"Medical relief in flood affected areas of North Bihar by the Bihar State Branch of the Indian Medical Association."

A medical relief Sub-Committee was formed with Dr. L. P. Choudhury (Patna) as convener.

The President, Bihar State Branch, toured the flood affected areas along with Director of Health Services, Bihar, where he was invited.

Medical Relief Centres: The Bihar State Branch opened seven centres—5 in Darbhanga District and 2 in Muzaffarpur District where the members of local Branches along with relief squads sent from Patna and Darbhanga worked for over six weeks.

Got Rs. 500/- from the Central Office of the I. M. A. Raised about Rs. 1,200/- as donations from Doctors, Medicines from different medical firms, vaccine and inoculation material and medicine chest from the local Government were provided. Besides Prophylactic work, our Centre gave curative treatment also.

Local Government fully co-operated in the work.

Page No. 2, Item 7 (a) (1): Add "course" after "M.B. B.S."

Page No. 4, Item No. 18: In the 1st para, delete "Gujrat & Saurashtra" and add "8 Ahmedabad".

Annual Report of the Journal Department:

Dr. S. Roy Choudhury (Calcutta) remarked about the surplus being less than previously. The details were explained by Dr. R. Sinha, Hony. Secretary of the Journal.

Dr. B. V. Mulay suggested that efforts should be made to contact other States and infuse enthusiasm in them which should be helpful to the Journal Dept.

Dr. R. Sinha noted and promised to make further efforts in the directions suggested.

Dr. A. K. Bose (Calcutta) informed and asked reasons for the publication of an artice which was declined by two referees. Dr. Sinha explained that the Committee had a right to take other opinions and act accordingly but promised to look into the matter if any specific case was cited by Dr. Bose.

The Annual Report of the Journal Department was then adopted (proposed by Dr. H. N. Shivapuri and seconded by Dr. Ved Prakash).

(12) *Invitations for the All-India Medical Conference to be held in December, 1955.*

Invitations had been received from Jullundur and Jaipur Branch for holding the next Conference in 1955.

The House by majority of votes decided in favour of holding the Annual Conference in 1955 at Jaipur.

(13) *Working Conditions of Asst. Medical Officers in Tea Gardens.*

Dr. J. Majumdar (Calcutta) informed the House that one meeting of the Sub-Committee had already been held at Calcutta. Further meetings of the Sub-Committee are necessary and the final recommendations will be sent up later to the Central Council.

(14) Dr. J. Majumdar (Calcutta) pointed out that in the Minutes of the Bangalore Working Committee meeting on page 240—Supplement of December 16, 1954—the following mistakes should be corrected :—

(*i*) 500 copies of YOUR HEALTH instead of 5,000 as printed.

(*ii*) The words "in lieu of this money" should be deleted.

The House accepted the suggestions of Dr. Majumdar.

5. (a) *Formation of New Local Branches* :

The Working Committee approved the formation of the following Local Branches :—

Name of Local Branch	State or Territorial Branch	No. of Members	Date of formation
1. Sirsi	M. & Karnatak	8	1-10-1954
2. Bakhtiarpur ...	Bihar ...	5	Do.
3. Kathor	G. & Saurashtra	6	Do.
4. Shillong ...	Assam ...	73	1-10-1953
5. Bally-Belur-Liloouh	Bengal ...	10	1-10-1954

(b) *Revival of Branches.*

		with effect from
1. Chirala	Andhra	1-10-1954
2. Bhir	Hyderabad	Do.

(c) *Suspension of Branches.*

The following local Branches were declared suspended as recommended by the State Branch :

1. Amroha	U. P. ...	...	1-10-1954
2. Balia ...	Do. ...	...	Do.
3. Banda ...	Do. ...	...	Do.
4. Etah ...	Do. ...	...	Do.
5. Etawah ...	Do. ...	...	Do.
6. Hapur ...	Do. ...	...	Do.
7. Mussoorie ...	Do. ...	...	Do.
8. Hissar ...	Punjab ...	...	Do.
9. Adilabad ...	Hyderabad ...	...	Do.
10. Gulbarg ...	Do. ...	...	Do.
11. Nalgonda ...	Do. ...	...	Do.

(d) *Branches declared Defunct* :

The following local Branches were declared Defunct as recommended by the State/Territorial Branches concerned :—

1. Baramati ...	M. & Karnatak	...	1-10-1954
2. Sundergarh ...	Orissa ...	...	Do.
3. Keonihar ...	Do. ...	...	Do.

6. *Consideration of the C.F.C. arrears* :

Dr. H. R. Dawar, the Treasurer, read out the figures of arrears of several Branches.

The question of Assam was taken up first and discussion ensued.

It was decided to write off the amount of Rs. 105/12/- on account of Assam State Branch.

Regarding Orissa, the Honorary General Secretary reported that this State Branch had an arrear of Rs. 359/- for the year 1952-1953. This State Branch also owed a sum of Rs. 290/- for the year 1953-1954. He also informed the House that no response was obtainable from the Orissa State Branch inspite of repeated reminders. He regretted that from this Branch, no replies were even forthcoming to other correspondence.

The House took a very serious view of the said State Branch and suggestions were even made for suspending it forthwith. It was however decided not to take this extreme step yet, but to send a representative of the Working Committee to that Branch, to study the situation and to try to enthuse activity there and to report on his efforts within a month.

The name of Dr. J. Majumdar was proposed for the purpose and he accepted the responsibility.

The House authorised the Honorary General Secretary to take appropriate action after the receipt of the Report of Dr. Majumdar. Dr. Majumdar's travelling expenses were to be met from the funds of the Association.

The House did not agree to write off the outstanding C.F.C. against other Branches.

7. *Adoption of Audited Accounts* :

(*i*) Central Office—From 1-7-54 to 30-9-54.
(*ii*) Journal Dept.—From Do. Do.
(*iii*) Annual Accounts for the year 1953-54.
(Central Office and the Journal Dept.)

8. *Consideration of Budget Estimates for 1954-55 (Central Office and Journal Dept.)* :

These two items were referred to the Central Council.

9. *Consideration of Resolutions received from the Local and State Branches of the I.M.A. :*

Resolution of the Travancore-Cochin State Branch were referred to the Subjects Committee.

10. *Date and venue of the meetings of the Working Committee for 1955. (Letter No. 269 dated 17-11-54 of Dr. C. O. Karunakaran, President, Travancore-Cochin State Branch, inviting the Working Committee meeting in October, 1955 in Trivandrum :*

The Working Committee decided to write to Dr. Karunakaran thanking him for the invitation to hold the meeting of the Working Committee in October, 1955 at Trivandrum. The Working Committee also decided to leave the matter to the President and the Honorary General Secretary about this meeting and other meetings of the Working Committee during the year 1955.

11. *Letter No. 597/53-54 dated 24-4-54 of the Madras State Branch re. representation of Branches on the Central Council and opinions of the State/Territorial Branches :*

It was decided to circulate the letter to the Branches and to bring it up at a future meeting of the Working Committee when the opinion of the Branches had been received.

12. (a) Report of the Pharmaceutical Enquiry Committee and views on it of the State/Territorial Branches.
(b) Proposal by Dr. K. A. Hamid for the formation of a Medical Pharmaceutical Council.
(c) Letter from the Travancore-Cochin Prov. Branch.

The discussion of the Report of the Pharmaceutical Enquiry Committee was deferred. It was decided that the State Branches be sent copies of (a), (b) and (c) above and their views invited within one month of receiving notice from the Central Office.

The subject was to be taken up again preferably at the next meeting of the Working Committee.

13. *Letter No. 6-47.pt. 11/54-36-D dated 24-11-54 of the Drugs Controller, India re. Introduction of the metric system of weight and measures.*

The letter from the Drugs Controller regarding the adoption of the metric system for medical and pharmaceutical purposes in India, was considered and the House agreed with the view that the metric system was more scientific and acceptable—and it should be adopted for general use. However, the House also recommended to the Government that the following points be kept in views :—

1. Training of Pharmacists and medical students on Metric System.
2. Revision of relevant text books with this idea in view, so far as possible.
3. Revision of Indian Pharmacopoeia and different Hospital Pharmacopoeias by simultaneous introduction of the equivalents to start with.
4. Special publication on Metric System of weights and measures with corresponding weights and measures of Imperial system and its free distribution through appropriate agencies.
5. Manufactures of actual weights and measuring equipments on Metric system and adequate publicity to the same.
6. Instruction to manufacturers of drugs and medicines to mention doses of this products in Metric system along with that of existing Imperial System.

14. *Government Grant for "YOUR HEALTH"—Minister of Health Letter No. 8139/H/54 dated 8-9-1954 regarding grant for YOUR HEALTH and Dr. P. K. Guha's letter No. YH/723/54 dated 16-11-1954 in reply—for information.*

The relevant information given by the President was noted.

15. *Papers concerning the World Medical Association.*

At the suggestion of the President, the House agreed that these papers be taken up in the Central Council meeting.

16. *Consideration of Insurance Cover for members of the Indian Medical Association.*

The President informed the House of the negotiations he had had with the New India Insurance Co. Ltd., regarding Insurance cover for the members of the Association with regard to claims for damages etc. against them. The House requested the President to carry on further negotiations and then to circularise the finalized plan to the State Branches for their opinion.

Dr. S. C. Sen, the President, also described the various types of the Insurance that he found obtaining in Switzerland. This Insurance was to cover temporary and permanent disability of a medical man. The other Scheme was to give medical men a type of annuity or alternatively a sort of Provident Fund.

The House suggested that the President might give further information about these Schemes by Circulars to the State Branches to elicit opinions.

17. *Any other business with the permission of the President.*

RESOLUTIONS

1(1) Resolution brought forward by Dr. B. V. Mulay (Sholapur).

The following resolution was proposed by Dr. B. V. Mulay and seconded by Dr. R. C. Goulatia (Delhi).—

"The Working Committee resolves that Special Committee be appointed to undertake the work of inspection in details of the Working of the headquarters and the Journal, with a view to recommend improvements in the efficient working of the office and effect economy in expenditure with due consideration of the welfare of the staff."

The House passed and accepted the Resolution and appointed the following Sub-Committe.—

1. Dr. S. C. Sen (New Delhi)—President—Convener.
2. Dr. B. V. Mulay (Sholapur)

—with powers to co-opt one local member from Delhi or Calcutta as the case may be. This co-opted member must not be an office-bearer—either of the Central Office or of the Journal Department.

The House also decided to allow actual travelling expenses incurred.

1(2) Resolutions brought forward by Dr. S. Roychaudhury (Calcutta) of the Bengal Provincial Branch :

Resolutions No. 1(a), (b), (c) and 2 were referred to the Central Council.

1(3) Resolution from Dhanbad Branch :

It was referred to the Subjects Committee.

1(4) Resolutions from the Nawanshahr Branch :

It was referred to the Subjects Committee.

1(5) Resolution brought forward by Dr. B. N. Ghosh (Calcutta) :

It was referred to the Subjects Committee.

1(6) Resolution from the Madras State Branch :

It was decided to circulate this resolution to all the Branches for opinion. It was to be brought up again at a future meeting of the Working Committee for discussion.

1(7) Resolution received from Dr. T. S. Balasubramaniam, suggesting a change in the Bye-Law 28-E of the I. M. A.

It was decided to circulate it to all Branches for opinion and then it was to be brought up at a future meeting of the Working Committee for discussion.

2. Letter No. 461 (2)/54-55 dated 7/12/54, from the Bengal State Branch objecting to the article "Apology" published in the Souvenir of the Bihar State Medical Conference.

This matter was discussed and talked out.

3. Letter No. 1646-DMA/53-54 dated 20-12-1954 of the Delhi Medical Association regarding the Delhi Medical Laboratories Registration Bill.

This matter was referred to the Central Council.

4. Letter No. 221/54-55 dated 10-12-1954 of the Bihar State Branch enclosing a scheme from Dr. S. N. P. Agarwal a member of Samastipur Branch.
It was referred to the Central Council.
5. Letter dated 23-11-54 received from Dr. G. P. Singh regarding Licentiates and their registration.
Deferred till the next Working Committee meeting.
6. Letter No. 598/54-55 dated 16-12-54 from the Bengal Provincial Branch suggesting appointment of a Special Committee to consider the subject of Indian Medical Council Act.

A Sub-Committee was formed with the following members to go into the matter and make recommendations :—

1. Dr. J. Majumdar (Calcutta)—Convener. 2. Dr. K. K. Sen Gupta (Calcutta). 3. Dr. A. K. Bose (Calcutta). 4. Dr. S. Roychaudhury (Calcutta). 5. Dr. A. N. Roy (Calcutta)—with powers to co-opt.

A copy of the Indian Medical Council Act was to be forwarded to each State Branch, with a request to send their opinions to the Sub-Committee within one month of the receipt of the circular.

Vote of thanks :

The following resolutions were proposed from the Chair and passed unanimously :

(1) This meeting of the Working Committee of the Indian Medical Association places on records its deep appreciation and thanks for the hospitality and courtesy accorded to its members on the occasion of the meeting held at Lucknow on 23rd December, 1954, by the :—

1. Reception Committee of the 31st All-India Medical Conference.
2. President and members of the Lucknow Branch of the Indian Medical Association.
3. Authorities of the King George's Medical College, Lucknow.

With a vote of thanks to the Chair, the meeting came to an end.

S. C. Sen,
President,
Indian Medical Association.

A. P. Mittra,
Hony. General Secretary,
Indian Medical Association

ANNEXURE I

(Annual Report)

Summary of Report of Drs. Chamanlal M. Mehta and C. S. Thakar.

Subject : Implementation of the Employees' State Insurance Scheme in Greater Bombay Area.

The Employees' State Insurance Scheme was implemented in Bombay Area on 2nd October, 1954.

It has been our sad experience that in several respects the Government of Bombay has failed to implement the terms in the proper spirit. There has not been any friendly understanding between the State Government and the I.M.A. in this State as was expected by us by virtue of the agreement arrived at in Delhi. The State Minister of Labour maintains that he is not bound by the agreement in as much as he was not a party to the agreement.

The Scheme has now been in operation under the Panel System in Greater Bombay Area for nearly three months. The total number of employees enrolled under the Scheme is 60,000 and their medical care at all stages of their sickness has been entrusted to the Local State Government. To start with, applications were invited from local Medical Practitioners and three Committees were set up for the purpose of their allocation. The I.M.A. Bombay Territorial Branch was asked to nominate their representatives on the two Allopathic Committees, one a graduate and the other a licentiate. The two Allopathic allocation Committees selected 778 Insurance Medical Practitioners, and the registered employees were instructed to register with the Insurance Medical Practitioner of their choice. The number of employees who have so far registered with the I.M.Ps. is 311000, and 289000 remains unregistered. In areas where the number of selected Insurance Medical Practitioners was found to be short compared to the number of employees seeking registration at the rate of 1000 employees on a Panel, the number of employees had to be raised by the State Government to 200, but this action should have been taken after discussion in the allocation Committee.

The Medical Practitioner has been provided with a formulary which contains several prescriptions made up by simple taking important drugs and chemicals and using the necessary solvents or diluents without any colouring, sweetening or aromatic media being added. As a result these mixtures are not favoured by the employees.

The special drugs in the list are very inadequate and these special drugs will be at the disposal of the Insurance Medical Practitioner whenever the necessity arises. But the local State Government has imposed a number of restrictions and regulations on their use. For example, Emetine for the treatment of Dysentery and Quinine for Malaria are denied to the Insurance Medical Practitioner unless and until a positive pathological report from the diagnostic centre is produced. Similarly liver-extract injections cannot be given until a blood report showing the strength of blood to be below a particular limit is produced. A revision of these regulations was suggested but to no effect.

Six diagnostic centres equipped with the necessary staff have been opened. At each centre there are 1. Two Physicians, 2. One Surgeon, 3. One Gynaecologist, 4. Two T. B. Specialists, 5. One E. N. T. Surgeon, 6. One Opthalmic Surgeon, 7. One Radiologist.

At Thana Centre there are only one Physician and one T. B. specialist.

These officers are part time men and are given a salary of Rs. 150/- per month for attending 2 hours a day in the afternoon, twice a week. In addition to this, a full time medical officer of B.M.S. class II, one laboratory technician and one laboratory assistant, one clerk and one part time nurse for two hours a day are employed. There is no provision in these diagnostic centres for dental cases and for skin and venereal diseases.

The appointment of the part time paid staff for the diagnostic centres is not in agreement with the terms of the Panel System. The employee here is denied his right to select his own consultant. Secondly in the selection of the Staff for the diagnostic centres, the Indian Medical Association was not consulted. These centres work only two days a week for two hours each day resulting in congestion of work and late disposal. We suggest that this system of diagnostic centres be scrapped. The sections which deal with pathological and bacteriological investigations be continued. For the examination of cases referred by the I.M.Ps. several panels of consultants in different areas in the city be instituted and paid for service on a scale mutually agreed upon by the Corporation and the I.M.A.

Regarding hospitalisation of the patients the State Government has reserved 300 general beds in the Government Hospitals in Bombay and is recovering from the Corporation Rs. 2/8/- per day per bed when vacant and Rs. 7/- per day when occupied. For T. B. cases they have reserved 80 beds in a private hospital in Ghatkopar, a northern suburb of Bombay and 20 beds at Talegaon where there is a Tuberculosis Sanatorium. These general beds have been reserved at the expense of the general public and the explanation offered by the State Government that these beds were usually occupied by the same type of the industrial patients, is not convincing. It is inequitable to make the Honoraries of a general Hospital work without any remuneration for the treatment of these insured employees for whose maintenance, the Government is covering from the Corpora-

tion a charge of Rs. 7/- per diem, contributed by the employer and the employee.

Four Ambulances provided for the whole of this vast area are grossly insufficient and it is desirable that the ambulance service should be put on a better footing at an early date.

The payment to the Insurance Medical Practitioner for his capitation fee for the first quarter is almost due. There is a large number of employees who have not yet registered with the I.M.Ps. The intention of the State Government is to pay the I.M.P. on the basis of the insured employees on his list at the end of the quarter. The practice followed in East Punjab where the panel system prevails is to divide the balance of capitation fee for the unregistered employees amongst the Insurance Medical Practitioners on the list. We demand that the payment for the employees who have not yet registered at the end of the quarter be pooled and distributed among the I.M.Ps. pro rata for the number of insured employees on their lists.

There is a large number of forms of various types for certificates etc. which the Insurance Medical Practitioner has to fill in. This involves a lot of unnecessary loss of time and labour. A Committee should be sent up to minimise this grievance of the Insurance Medical Practitioner.

To recapitulate the various suggestions that we have made :

1. The State Government be asked to consult the local I.M.A. before deciding important issues. 2. Important decisions should not be arrived at before previously consulting the I.M.A. 3. The formulary should be revised. 4. Fuller and more thorough list of special medicine should be published. 5. Special medicines should be at the disposal of the Insurance Medical Practitioner without undue restrictions and regulations. 6. Diagnostic centres should be replaced by panels of consultants and they should function only for pathological work and X-ray examination. 7. Hospitalisation should be on a large scale and private nursing homes and hospitals should be invited to offer beds by open advertisement. 8. Ambulance service should be extended. 9. Payment for unregistered employees should be distributed amongst the Insurance Medical Practitioners. 10. The number of forms to be filled in by the Insurance Medical Practitioner should be revised and reduced.

We request that these various facts which we have jointly considered and put up for your consideration be submitted to the Ministry of Labour at the Centre at an early date.

ANNEXURE II (Annual Report)

Report of Dr. K. K. Sen Gupta, representative of the I.M.A. on the Drugs Technical Advisory Board.

There was only one meeting of the Drugs Technical Advisory Board, during the period which was held in October 1953 in the Department of the Directorate of Health Services, New Delhi.

The proceedings consisted of amendments to the provisions of the Drugs Act 1940 and the Drugs Rules 1945. These were mostly on the following heads :—

1. Production of Drugs—with adequate personnel, appliances and apparatus.
2. Restriction of the granting of licenses for the manufacture of drugs to such manufacturers only who possess the requisite as mentioned in (1).
3. Distribution of Drugs—to stockists who possess arrangement for proper storage—subject to the periodic inspection of the sale and stock by qualified inspectors of drugs—to safeguard against the sale of spurious drugs.
4. Packing and labelling of drugs and classifying them under various schedules mentioned in the Drugs Act.
5. Amendment of the various forms for application under the Drugs Act and Drugs Rules.

All these have been published in the revised and enlarged edition of the Drugs Act and Drugs Rules 1954.

These amendments were made after securing opinion of the members by letters from time to time throughout the year. There was no difference of opinions in connection with these amongst the members of the Board.

In the meeting above referred to, I had an occasion to record a note of dissent in connection with the water of crystallisation of the stock of Quinine manufactured and held by the Government. This water of crystallisation did not conform precisely to the permissible limit of the B. P. Standard.

Majority of the members present, considered this discrepancy as inconsequential and sanctioned its use on a par with the B. P. standard.

I thought that the standard of precision in respect of drugs should be one and the same for the Government and private manufacturers and should not be a matter for compromise on any ground however unimportant it might appear.

Besides, it might find employment for several graduates or chemist technicians to adjust the water of crystallisation exactly to the standard of precision prescribed by the B. P.

BRANCH NOTES

MEERUT BRANCH—The annual meeting of the branch was held on 21-11-54. Office-bearers were elected with Dr. S. B. Vyas as president and Dr. R. K. Laroia as hony. secretary. The annual report for 1953-54 shows that there was a fall in membership during the year. Twelve general meetings were held including 2 special and 1 condolence. The executive committee met eight times during the year. A good number of clinical subjects were discussed in some of the meetings. The library has been enriched by quite a large number of valuable books.

SHIMOGA BRANCH—A clinical meeting of the branch was held on 18-12-54. Dr. S. Seshagiri presided. Drs. B. S. Venkatashamanna and C. P. Krishnamurthy spoke on Public Health and Malaria. A debate took place about recent cholera epidemic near Shikaripur. A short paper on 'Watering of Eye' was read by Dr. M. Osman Sheriff.

TIRUCHY BRANCH—A meeting of the branch was held on 27-11-54 with Dr. N. C. Subramanyam in the chair. Thirty-three members were present. The draft rules with amendments were approved for enforcement from 1-1-55. The meeting offered its sincere thanks to the medical staff of the Rajaji Tuberculosis Sanatorium, Tiruchy for the generous gift of a Radiograph Illuminator. Dr. R. Kalamegham was to take over the management of the Miscellany. Dr. R. Kalamegham gave a talk on 'Surgery through the ages'. A film on 'Gelfoam in Surgery' was also shown.

XXI ANDHRA PROVINCIAL MEDICAL CONFERENCE

The 21st Andhra Provincial Medical Conference will be held at Nellore in the third week of April 1955. For further particulars, please write to the Hony. General Secretary, Andhra Provincial Branch, I.M.A., Visakhapatnam.

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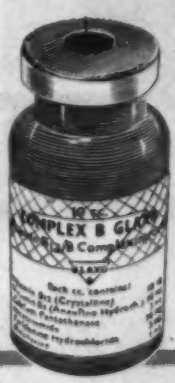

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Liver Extract	50	gm
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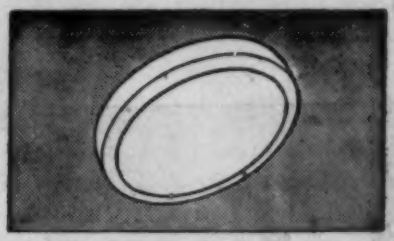

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NULACIN tablets are indicated whenever neutralization of the acid gastric contents is required: in active and quiescent peptic ulcer, gastritis, gastric hyperacidity.

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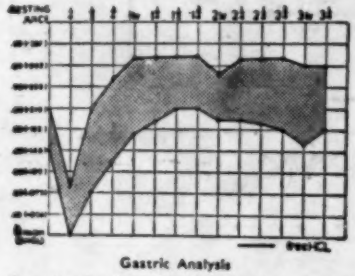
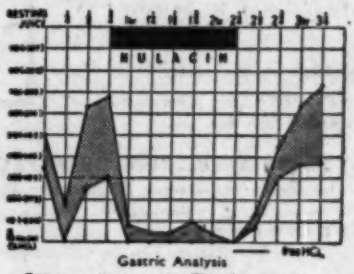
During the stage of ulcer activity up to three tablets an hour may be required. During quiescent periods, for prophylaxis in peptic ulcer and for the relief of discomfort due to gastric hyperacidity, the dose of NULACIN is one or two tablets between meals.

NULACIN tablets are not advertised to the public and there is no B.P. equivalent. NULACIN tablets are available in dispensing units of 12 & 25 tablets.



Superimposed gruel fractional test-meal curves of five cases of duodenal ulcer.



Same patients as in Fig. 1, two days later, showing the striking neutralizing effect of sucking Nulacin tablets (3 an hour). Note the return of acidity when Nulacin is discontinued

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REFERENCES

British Medical Journal, 180-182, 26th July, 1952

Medical Press, 195-199, 27th Feb., 1952

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Council on Pharmacy and Chemistry of the American Medical Association: *J.A.M.A.* 152:331 (May 23) 1953.

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Greiner, T., & Gold, H.: *J.A.M.A.* 152:1130 (July 18) 1953.

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Goldman, B. R., & Steigmann, F.: *J. Lab. & Clin. Med.* 40:803, 1952.

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